



HARTFORD CLIMATE ACTION PLAN



Cover image: The “My Vision for Hartford” public comment wall during Envisionfest Hartford, an annual festival celebrating creative ideas for our capital city.

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FROM THE MAYOR

To my fellow Hartford stakeholders:

I am proud that Hartford is one of the first cities in Connecticut to put forth a bold, comprehensive Climate Action Plan that will respond to the twin problems of climate change and environmental degradation. I truly believe that each of us, working together to achieve the goals in this Plan, can strengthen Hartford's environment and economy—while making our community healthier and more equitable.

This is a Plan for all of us. It was written with special attention to the quality of life and engagement of those who are underserved and underrepresented in discussions about climate change.

At the same time, we recognize that all of us can do our part. Achieving the goals of this Plan depends on each of us making choices that reduce our negative impact on the environment.

The hundreds of people who have provided input into this Plan should have our sincere thanks. In particular, I wanted to recognize and thank the volunteer members of the Climate Stewardship Council and the staff of Hartford's Office of Sustainability, created in my office in 2017 thanks to generous funding from the Hartford Foundation for Public Giving, Partners for Places and UConn's Connecticut Institute for Climate Resilience and Adaptation.

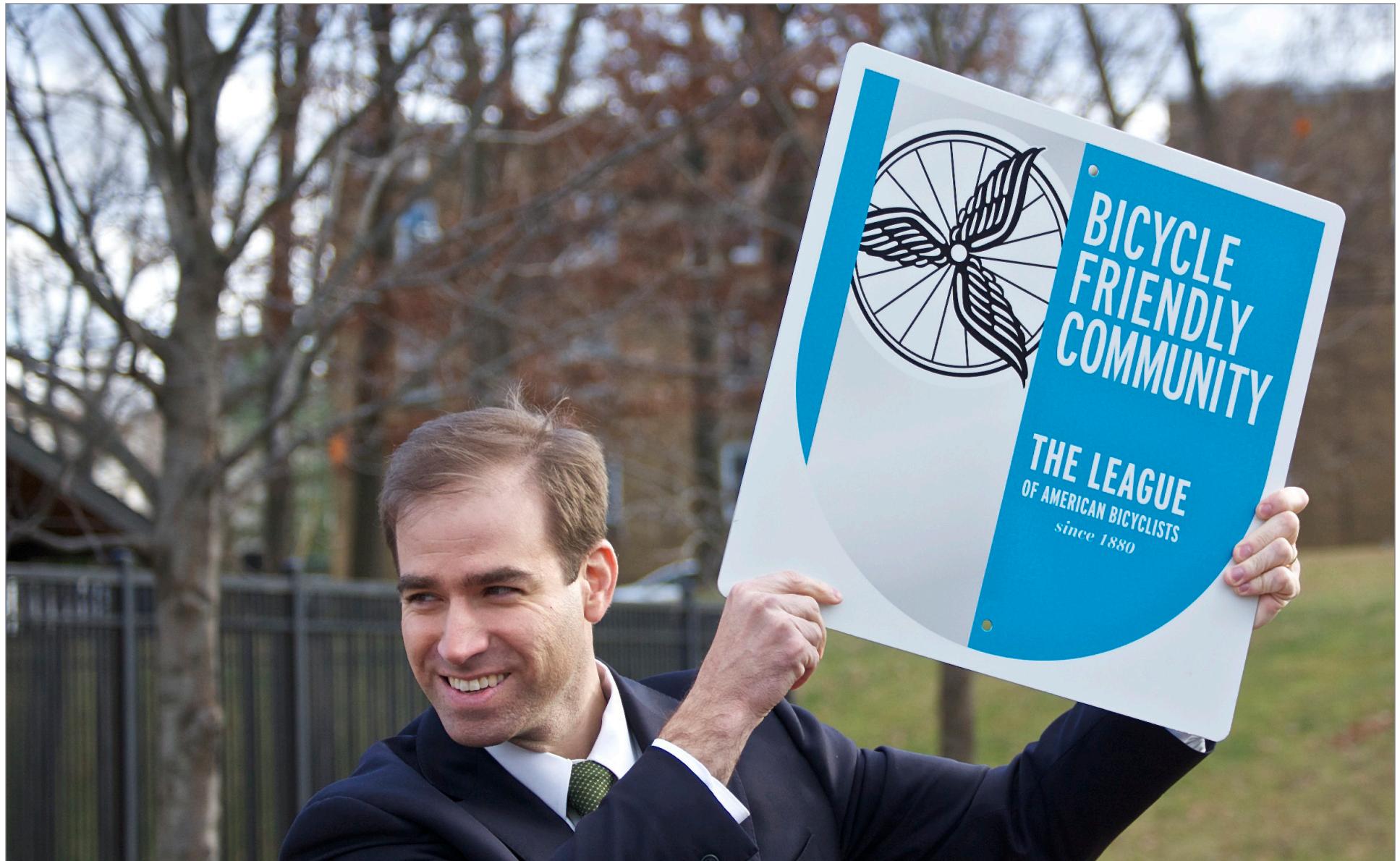
This Climate Action Plan is a starting point, so I encourage you to get involved, provide feedback, and help us to become even more ambitious.

Onward,



Luke A. Bronin
67th Mayor of Hartford

At right: Mayor Bronin celebrating the city's Bronze Level Bicycle Friendly Community designation from the League of American Bicyclists in 2016 at a community gathering in Pope Park.



"Each of us, working together, can strengthen Hartford's environment and economy—while making our community healthier and more equitable."



INTRODUCTION



Climate change affects each and every one of us. An overheated atmosphere, extreme weather, and rising sea levels are threatening our quality of life. Improving the environment can benefit Hartford residents and businesses in myriad ways.

It's time for all of us to step up and take action.

This Climate Action Plan provides a starting point for our collective action by presenting a roadmap for Hartford to become a global leader in environmental stewardship. It will help us stop harming our planet and start adapting to changes already occurring, so that we can shape a more healthy, vibrant, and resilient city.

This Climate Action Plan charts a course to a cleaner environment that will improve public health outcomes, advance the economy, and promote social equity.

This last point is important. Our Plan must be grounded in the notion that clean air, water, and soil are basic human rights. We must develop a vision in which all may share—a vision that acknowledges the fact that Hartford's underprivileged residents are disproportionately vulnerable to the negative effects of climate change.

Hartford's Climate Action Plan starts with a statement of our values, then delves more deeply into 6 "action areas" for which we think that Hartford can make significant

progress in the near term. These areas are: energy, food, landscape, transportation, waste, and water.

The Plan presents the unified vision of hundreds of people engaged during the drafting period. It was championed by the Hartford Climate Stewardship Council and will be implemented by the City of Hartford's Sustainability Office, in partnership with residents and stakeholders.

This ambitious Climate Action Plan cannot be achieved by a single organization or individual. Realizing our goals will take all of us: businesses, the public sector, non-profit organizations, and all who care about a greener Hartford.

At left: Volunteers from the Yard Goats organization celebrate a hard's day work constructing a hoophouse in Keney Park. Now, that facility is used to grow food year round.

3 CLIMATE CHANGE IMPACTS

Hartford's climate—like that of the rest of the world—is changing, due in large part to human activity. Emissions of CO₂ and other greenhouse gases are contributing to a rise in global temperatures, and this phenomenon has far-reaching consequences for the air, water, and natural environment that sustain us. While all of the United States has warmed over the last century, Connecticut

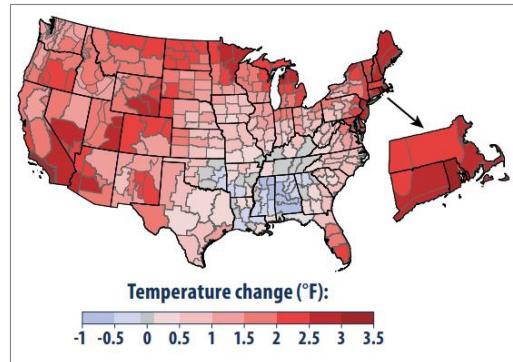
has warmed twice as much as the average of the rest of the contiguous 48 states, as shown in the graphic at right.

If we ignore climate change, the severity of this crisis will only grow. While climate change effects everyone, low-income residents are most threatened. By addressing climate change through effective action we

can seize upon opportunities to improve public health, promote social equity, and advance our economy.

On the following pages, read more about 3 impacts of climate change:

- **Warmer, wetter winters**
- **Hotter, drier, summers**
- **Extreme flooding events**



Above: A graphic showing relative rates of temperature change across the continental United States, from the EPA "Climate Change Indicators" resource.

At right: Concerns about climate change are shared globally, as students from a Hartford public high school, the Academy of Engineering and Green Technology, learned in 2016. They created solar and wind systems to power Saldang, a remote village in Nepal. Thinley, the village elder, made the long journey from Saldang to Hartford to meet with students who worked on the project and to show his appreciation.

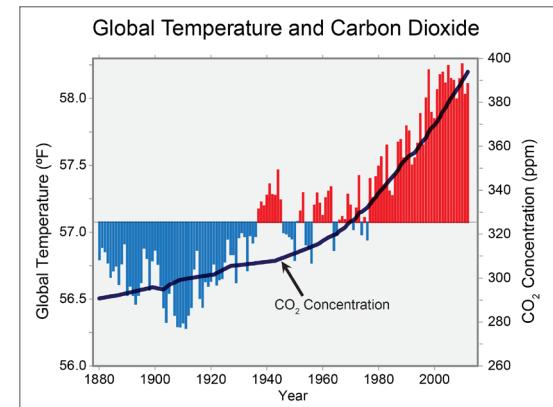




WARMER, WETTER WINTERS

In the last century, Connecticut warmed between 2 and 3 degrees Fahrenheit. This change is most noticeable in winter temperatures, which rose 1.3 degrees per decade from 1970 to 2000. In 112 years of record-keeping in Hartford, the winter of 2015-2016 tied the winter of 2001-2002 for warmest on record.

Warming temperatures can wreak havoc on our ecosystems, bringing invasive species northward and destroying habitats of native animals and birds. However, winters aren't just getting warmer. Paradoxically, storm systems are becoming even more ferocious, which imperils Hartford families.

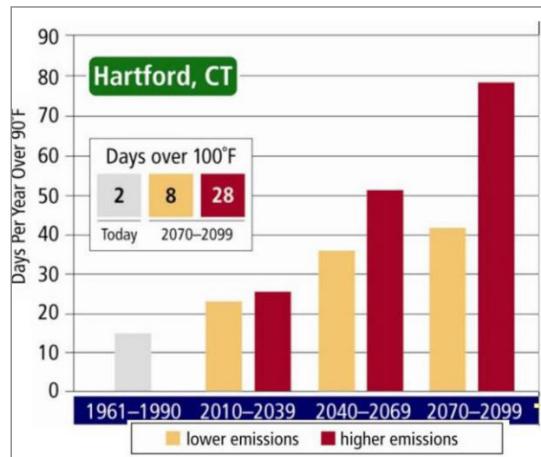


In recent years, Hartford has seen increasingly severe winter storm systems halt economic activity, cause damage to property, strain energy and transportation infrastructures, challenge the city to deliver emergency services, and place residents' lives in danger. During major blizzards of 2011 and 2013, Hartford was buried beneath feet of crippling, wet snow. Major power outages spread across the region. Yet, with city shelters full and local hotels financially prohibitive, some low-income residents were left with nowhere to turn.

According to the EPA, in the next century, annual precipitation and the frequency of heavy downpours in Connecticut will continue to rise. Sometimes increased precipitation will come in the form of damaging blizzards. However, on the whole, less winter precipitation will fall as snow and more will fall as rain. With an earlier spring snowmelt resulting in earlier peak river flows, we must also confront the specter of flooding.

Above: The Hartford Fire Department and an Aetna Ambulance crew treat a seizure patient during winter storm Charlotte. Chart from the 2014 National Climate Assessment.

Hartford's summers are getting hotter and drier. Demonstrating this warming trend, this chart measures the number of days Hartford's temperature reaches and will reach 90 degrees and 100 degrees Fahrenheit:



In the coming years, dramatically hotter summers are predicted. If we have lower greenhouse gas emissions, there will be fewer high-heat days.

From 1981 to 2010, Hartford County experienced 162 total heat wave days (defined by the National Weather Service as a day measured in the 95th percentile of the daily maximum air temperature), or nearly 6 days per year on average. In the future, we can expect hot summer conditions to last substantially longer.

With its abundance of concrete and asphalt, and its relative lack of vegetation,



Hartford tends to have higher temperatures than surrounding areas. Between 2011 and 2016, a rash of heat waves threatened thousands of residents who lacked air conditioning and were dependent on public transportation.

High temperatures can lead not only to heat exhaustion and heatstroke, but they can also

increase the formation of smog and the severity of pollen, both of which in turn contribute to respiratory problems. Asthma rates in Hartford are among the highest in the country. Furthermore, rising temperatures place greater demands upon our power grid during the summer months, causing brownouts and blackouts.

Above: The Hartford Fire Department at a cooling tent during a high-heat day. Chart from Frumhoff et al., Northeast Climate Impacts (2007).

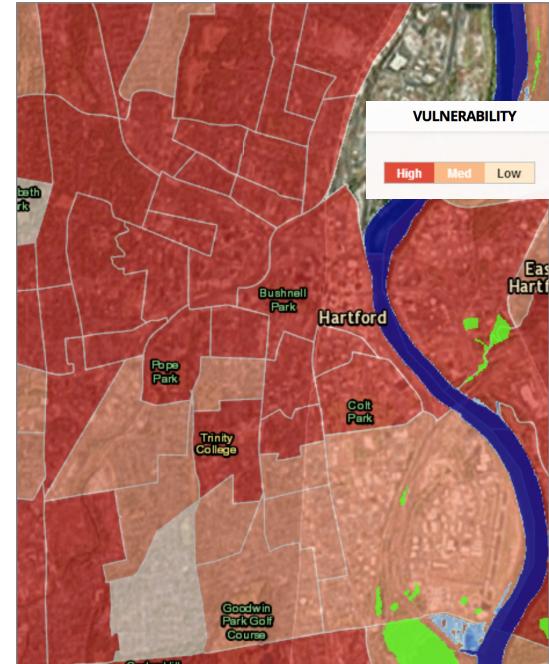


EXTREME FLOODING

Though Hartford is an inland city, its adjacency to the Connecticut River has exposed it to highly destructive floods in the past century.

Climate change will place additional pressure on Hartford's aging system of levees, heightening the flooding risk. According to the EPA, average annual precipitation in the Northeast

increased 10 percent from 1895 to 2011, and precipitation from extremely heavy storms has increased 70 percent since 1958. The National Climate Assessment predicts that a warming climate will increase the intensity of hurricanes and major rainfall events. Flooding has the potential to impact 25% of Hartford's land area, inundating approximate-



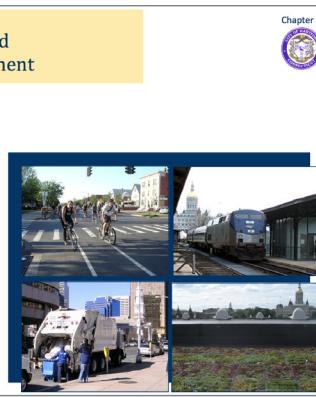
ly 3,000 acres of highly developed residential, commercial, and industrial areas and destroying 20% of the city's grand list. The \$2 billion South Meadows Wastewater Treatment Facility, the largest such facility in the area and the sole processing center for sludge-based waste, would potentially be affected.

Hartford's most vulnerable residents and businesses would be devastated by flooding. The map above highlights potential impacts on all Hartford neighborhoods. Incorporating Census data on population (such as age and poverty) and the built environment, the map illustrates socioeconomic vulnerability in an extreme flooding scenario.

Above: Flooding of Mortensen Riverfront Plaza, immediately adjacent to downtown. Map from the National Oceanic and Atmospheric Administration "Sea Level Rise Viewer," available online.

PLANNING & ENGAGEMENT

Planning and engagement are at the core of the Climate Stewardship Council, formed as a working group of the Planning & Zoning Commission. This Climate Action Plan builds on several previous community-wide sustainability documents and processes, which have called for local action on climate change. Ultimately, this Climate Action Plan will be incorporated into the city's next comprehensive plan, scheduled for 2020.

<p>One City, One Plan Greening Hartford and Sustainable Development</p> <p>Chapter 9</p> <p>KEY TOPICS</p> <ul style="list-style-type: none">• Energy & Renewable Energy Management• Waste Reduction• Urban Design & Green Building• Natural Environment• Transportation• Environmental Health• Water Resources• Goals & Objectives <p>Adopted June 3, 2010</p> 	<p>The city adopts "One City, One Plan," a citywide urban plan which involved 1,000 stakeholders and includes a chapter entitled "Greening Hartford and Sustainable Development."</p> 	<p>Community Solutions releases the Northeast Neighborhood Sustainability Plan, engaging 10% of the neighborhood and targeting health, infrastructure, and economic growth.</p> 
<p>North Branch Park River Watershed Management Plan</p>  <p>July 2010</p> <p>Prepared for Connecticut Department of Environmental Protection</p> <p>Prepared by: FUS & O'NEILL Design & Deliver</p> <p>In Cooperation With: Park River Watershed Revitalization Initiative Farmington River Watershed Association</p> <p>Project No. 20071446-A30</p>	<p>The North Branch Park River Watershed Management Plan is prepared for State of Connecticut DEEP, in cooperation with the Park River Watershed Revitalization Initiative.</p> <p>The City's Advisory Commission on the Environment holds an Environmental Summit, gathering 80 leaders to discuss a range of topics of citywide concern.</p>	<p>The City commits to be a Clean Energy Community, reducing energy use by 20% by 2018 and to achieve incremental energy reductions each year.</p>

2010

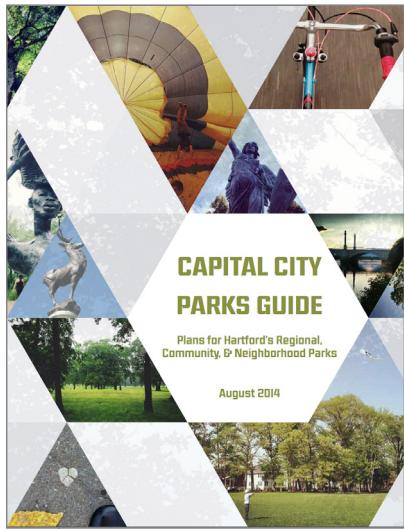
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2012

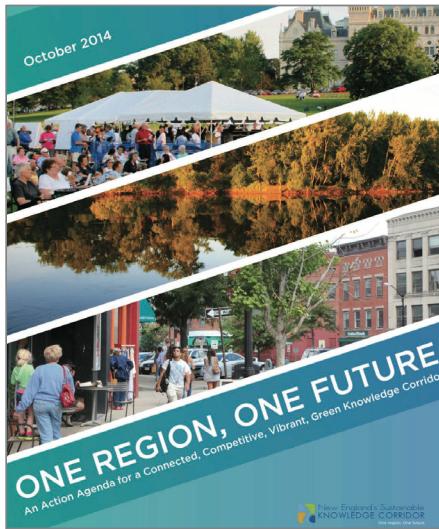
2013

2014

ADOPTED SEPTEMBER 2017

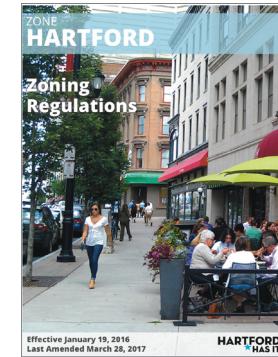
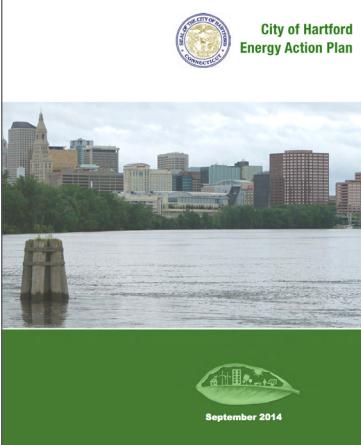


The city develops the "Capital City Parks Guide: a Plan for Hartford's Regional, Community and Neighborhood Parks," with the goal of repositioning the parks system as an interconnected network of high quality, diverse parks serving all neighborhoods.



The Capitol Region Council of Governments' "One Region, One Future: An Action Agenda for a Competitive, Connected, Vibrant, Green Knowledge Corridor" sets out a sustainability vision for the region.

The Clean Energy Task Force, including City staff and the public, makes recommendations on energy efficiency, renewable energy, and greenhouse gas emissions reductions.



The Planning & Zoning Commission adopts a new, form-based zoning code with sections on renewable energy, stormwater management, green roofs, waterway buffers, electric vehicles, tree protection and cultivation, complete streets, and transit-oriented development.



The Capitol Region Council of Governments releases an amendment to the Regional Pedestrian and Bicycle Plan, which suggests that Hartford improve connections to regional infrastructure.

2014

2015

2016



The Planning & Zoning Commission creates the Climate Stewardship Council, which convenes nonprofits, regional and state governments, and private businesses to collaborate on sustainability and draft a Climate Action Plan.



Graduate students from UConn work with members of the Climate Stewardship Council and the broader community to research and draft sections of the Climate Action Plan, and publicly present their work.

OUR MISSION

Together, we aim to advance the city's economy, improve public health and quality of life, and promote social equity while becoming a global leader in environmental stewardship.

[JOIN US!](#)

The Climate Stewardship Council launches a website, which includes "What Can You Do?" pages, has an interactive map developed by Trinity College students, hosts a regularly updated blog, and has a "Contact Us" page to welcome feedback.

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Concept Draft as of January 2017

A concept draft, based largely on the students' work, is discussed by the Climate Stewardship Council, and feedback is incorporated into the ongoing drafting process.

Hartford Climate
@hartfordclimate

Hartford Climate Stewardship Council prioritizes envl justice, public health, & economic devlpmt in 6 areas: energy, food, land, transportation, waste & water.

Hartford, CT • [hartford.gov/climate](#)

TWEETS 46 FOLLOWING 0 FOLLOWERS 38 LISTED 0 Following

A Twitter account, @hartford-climate, is created to publicize events, initiatives, and Climate Action Plan milestones.



Climate Stewardship Council members present the concepts behind the Climate Action Plan to a wide variety of groups. Pictured is a presentation to Hartford 2000, which is the umbrella association of all neighborhood revitalization zone associations.

2016

14

2017

ADOPTED SEPTEMBER 2017



The Climate Stewardship Council cohosts a conference at UConn Law School on municipal climate policy, drawing over 200 people. Leaders from New York City, Los Angeles, Portland, and other places explained their cities' climate action efforts, and an afternoon workshop focused on the six action areas of Hartford's Climate Action Plan. Pictured top right, the Food focus group.



Mayor Luke Bronin hosts a Town Hall on environmental issues, entitled, "A Cleaner, Greener, Healthier Hartford," asking for public feedback on a draft of the Climate Action Plan.



The City cosponsors several workshops, in the North, South, and West Ends of Hartford, to offer information to homeowners about solar energy options. Pictured is the workshop at Hartford Public High School.



Mayor Bronin creates a Sustainability Office, hiring a coordinator (Shubhada Kamble, above) with support from Partners for Places and the Hartford Foundation for Public Giving, and a green infrastructure team with support from UConn's CT Institute on Resilience and Climate Adaptation.



After more public meetings and feedback, the Climate Stewardship Council and Planning & Zoning Commission adopt the Climate Action Plan. Everyone celebrates!



OUR VALUES

PUBLIC HEALTH



WE VALUE

This Climate Action Plan will allow Hartford to tackle pressing health challenges facing residents. The city's low ranking in a majority of social determinants of health—including employment, housing, safety, education, economic security, and environmental quality—presents an opportunity for significant improvement.

A coordinated approach required by existing and future climate change can at the same time allow for progress toward improving the health of all Hartford residents.

What might success look like?

- All residents have access to affordable, fresh food that meets cultural tastes and preferences.
- Hazardous brownfield sites and homes with asbestos and lead-based paint are identified and cleaned up.
- Improved urban forest canopy, clean energy vehicles, and greater reliance on renewables make the air cleaner and reduce asthma rates.
- Park and river trails are more accessible to residents, leading to reduced obesity rates and improving pedestrian safety.
- Education programs on exercise, diet, and medical care are available to all.

At left: A scene from the Knox Harvest Market. Opposite page: The Science March at Mortensen Riverfront Plaza in 2017 highlighted Hartford's climate action planning efforts and rallied people from around the region for evidence-based social action.

WE VALUE \$:

Climate action is inherently local, and through efforts such as energy efficiency, renewable energy installations, waste recovery, and local agriculture, climate action initiatives can create stable jobs with living wages that cannot be exported overseas. Hartford has lost a third of its manufacturing jobs in the last 30 years. The unemployment rate in Hartford in 2017 is 8.5%—the highest in the state (4.8% average).

Green economic development in Hartford could increase employment opportunities for Hartford residents while simultaneously reducing overall greenhouse gas emissions. This Climate Action Plan aims to encourage and support economic development in the city of Hartford to benefit the city and all its residents.

What might success look like?

- Hartford residents have access to a wide variety of green jobs.
- Electricity costs—the highest in the continental United States—decrease for households and businesses, so they can instead invest in workers and infrastructure.
- Walking paths, bikeways, and public transportation offer safe, affordable connections to jobs, recreation, and services.

At right: Al Prince Tech students hone skills they use to build a solar-powered house, located in the school's courtyard.

ECONOMIC DEVELOPMENT



SOCIAL EQUITY



WE VALUE :

In cities across the US and around the world, low-income communities of color are disproportionately exposed to polluted air, water, and soil, layering additional injustices upon challenges faced by vulnerable families. Added to this burden is the threat of climate change, which brings with it extreme weather that can result in added financial and personal difficulties for families. As a city, we are underprepared for these challenges.

We can do better. Addressing climate change will improve the lives of the residents of Hartford and promote equity across the city.

What might success look like?

- Low-income households and persons of color are engaged in this Climate Action Plan, from planning to implementation.
- All Hartford residents, including those who lack access to adequate heat or air conditioning in their homes, have access to shelters and emergency facilities during flooding, excess snow and ice, and heat waves.
- All neighborhoods include vibrant mixed-use corridors of opportunity, reachable by walking, biking, taking public transportation, and driving.

At left: Members of Vecinos Unidos celebrate at their annual recycling "verbena" (festival) in the Frog Hollow neighborhood.



OUR GOALS



Now is the time for a plan that comprehensively evaluates the root causes of climate change and considers adaptation strategies to improve resiliency—our ability to respond to challenges.

To that end, this Climate Action Plan identifies 6 interconnected action areas:

- **Energy**
- **Food**
- **Landscape**
- **Transportation**
- **Waste**
- **Water**

Our hope is to make incremental but consistent progress in each of these areas, using the resources that are available to us and making decisions that are consistent with our 3 shared values.

Those shared values are:

- **Public Health**
- **Economic Development**
- **Social Equity**

Our most ambitious goal is the last: to use sustainability work as a vehicle for social justice, strategically targeting projects and initiatives that allow our community to achieve multiple wins in education, green jobs, and neighborhood revitalization. We have tried to ensure that the strategies laid out in this Climate Action Plan benefit Hartford residents most. At the same time, this Plan anticipates many actions that have benefits to the broader community beyond our city limits.

Hartford has already made important strides in each of these areas. Throughout

this Climate Action Plan, we recognize and celebrate the work done to date, both within City operations and beyond, and seek to build upon it. We recognize that our efforts in each of the 6 action areas will sit within a history of prior action and possibility.

Looking to the future, it is important to note that an implementation timeline has not been set in stone. We anticipate that significant headway on the strategies set forth within this Climate Action Plan can be made within a 3-year timeframe—especially if we are fortunate to receive external support.

At the same time, some of the strategies called for in this Climate Action Plan are already underway. We will build on completed strategies as this Plan continues to be implemented and updated.

At left: Members of the Department of Public Works, Garden Club of Hartford, and Friends of Keney Park gather after working together to beautify the Woodland Street entrance to Keney Park.

TERMINOLOGY

“PLAN” = The entire Climate Action Plan as a whole.

“SHARED VALUES” = The 3 shared priorities we hope to achieve with this Plan:



“ACTION AREA” = The 6 focus areas of this Plan: Energy, Food, Landscape, Transportation, Waste, and Water.

“GOALS” = Desired results within each Action Area.

“STRATEGIES” = Specific actions we think will help us achieve our Goals.

“TYPE” = The 8 types of Strategies we are using, which either prepare Hartford for change or actually implement the change.

Preparation-Type Strategies:

Education/Outreach: An action that involves public awareness or engagement.

Inventory/Assess: An action that surveys past activity to inform future decisions.

Partnership/Advocacy: An action that convinces others to help or be agents of change.

Policy/Code: An action that changes law, regulation, or policy.

Implementation-Type Strategies:

Enforcement: An action that ensures enforcement of existing codes.

Incentive: An action that encourages or provides benefits for behavioral changes.

Physical Change: An action that produces built or tactile results.

Program/Plan: An action that involves developing a program or plan for future action.

VISION SUMMARY

We have developed an overall statement of our shared vision for each of the 6 action areas. This language will be repeated on the first page of each section for the 6 action areas.



ENERGY

Cleaner, cheaper, and more reliable energy that reduces the likelihood of power outages during storms, creates green jobs, reduces fossil fuel dependence, and cuts energy costs for all.



FOOD

Nutritious food that is locally grown or non-carbon-intensive, and is readily available across all neighborhoods, leading to improved health and greater resiliency for area families.



LANDSCAPE

Landscapes filled with trees and meadows that together mitigate the effect of high heat days and flooding, provide ecosystem services, absorb and filter runoff, offer recreation, and clean our air.



TRANSPORTATION

A multi-modal, affordable transportation network with safe biking and walking options and fewer vehicle-related emissions, which improves air quality and cuts asthma rates.



WASTE

Eradication of the worst trash and blight, and public education that boosts diversion, recycling, and reuse rates—which in turn cuts costs, related emissions, and environmental degradation.



WATER

More efficient use of potable water, better protection against floods and droughts, and waterways made cleaner through green infrastructure that reduces and cleans stormwater runoff.

ACTION AREA A:

In this action area, our overall vision is cleaner, cheaper, and more reliable energy that reduces the likelihood of power outages during storms, creates green jobs, reduces fossil fuel dependence, and cuts energy costs for all.

Over the last few decades, Hartford has transitioned from coal to hydroelectric power to natural gas today. Hartford must explore additional sources of energy to accomplish its sustainability goals.

On the public side, some of the city's municipal buildings are inefficient, requiring upgrades to reduce costs to taxpayers. On the private side, Hartford energy consumers have electricity rates that are among the highest in the country.

Hartford already has made strides to improve its energy sources and energy conservation. It has municipal facilities that use clean and renewable energy, has created a public-private microgrid and an energy improvement district, and participates in a program that brings solar to low-income homeowners. Many of these initiatives have been done in partnership with Eversource, our energy utility company.

More can be done. Making energy cleaner, cheaper, and more reliable can improve quality of life for Hartford residents of all income levels and can ensure that Hartford's businesses can be competitive over the long term.

ENERGY



- Goal 1: Improve Energy Efficiency of Public Properties**
- Goal 2: Improve Energy Efficiency of Private Properties**
- Goal 3: Increase Renewable Energy Use**
- Goal 4: Encourage Clean Energy Vehicles**
- Goal 5: Increase Energy Resiliency**

Above: Mayor Bronin, members of the Youth Service Corps, and employees of Eversource hold the US Department of Energy energy efficiency flame at an LED light bulb swap at the South End Senior Center.

1st PUBLIC-PRIVATE MICROGRID IN CT



Connected in 2017 a 800 KW fuel cell microgrid powering a Parkville school, store, and more when the grid fails.

ZONING FOR CLEAN ENERGY



Adopted in 2016 award-winning zoning incentives for renewable energy and requirements for EV charging stations.

GREENING THE LANDFILL



Built 1 MW of solar on the landfill in 2014, powering City facilities in the North Meadows.



WHAT WE'VE DONE, TOGETHER

HISTORIC GUIDELINES FOR SOLAR



CITY OF HARTFORD GUIDELINES FOR SOLAR ON HISTORIC PROPERTIES

ADOPTED 2017

SECTIONS

1. OVERVIEW
2. TYPES OF SOLAR
3. PROCEDURES
4. GENERAL GUIDANCE
5. SPECIFIC GUIDANCE: Building-Mounted Solar
6. SPECIFIC GUIDANCE: Freestanding Solar
7. SPECIFIC GUIDANCE: Solar Parking Lot Canopies

Adopted guidelines for freestanding and building-mounted solar in the city's historic neighborhoods in 2017.

SOLSMART GOLD DESIGNATION



Earned highest recognition in 2016 from US DOE for having zoning and other policies that promote solar accessibility.

SOLAR FOR ALL USERS

Solarize Hartford

Solar. Simple. Affordable.



Come to our Solar Workshop!

MAY
Please join us to learn more about this exciting time-limited opportunity to install solar energy on your home for less!

Partnered with CT Green Bank on "Solar for All" and discounted bulk solar "SolarizeCT" for our residents in 2017.

GOAL 1:

Improve Energy Efficiency of Public Properties



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

Energy efficiency means wasting less energy by making physical or behavioral changes. To make a building more energy efficient, you might first conduct an audit to see where you are losing energy. You might benchmark your building against similar buildings, to see how you measure up. And then you might retrofit it with insulation, storm windows, or a new roof (maybe a "cool" roof) to keep the cold and heat out.

Hartford's municipal buildings and infrastructure must become more energy efficient, so that taxpayer money can be put toward more productive use. The City is already making a strong effort to audit, benchmark, and retrofit Hartford's municipal and school buildings in partnership with Eversource, energy service companies, the Board of Education, and the Department of Public Works.

Over time, these efforts will pay dividends. City staff is in the process of measuring payoffs and assessing which public buildings qualify for EPA's ENERGY STAR designation, which would indicate that they meet energy efficiency standards relative to other buildings of similar type across the country.

Below are an array of strategies to continue making our public facilities energy efficient.



The Public Safety Complex, which houses police and fire headquarters, has saved 10% in energy reductions from the baseline year in 2014, due in part to retrocommissioning and efficiency suggestions from a third party partner.

#	STRATEGY	TYPE	PURPOSE
a	Collect and Analyze ENERGY STAR Data for Enrolled Public Buildings	Inventory/Assess	Measure energy consumption reductions over time for benchmarking and retrofit efforts.
b	Enroll More Public Buildings in ENERGY STAR Program	Inventory/Assess	Measure energy consumption reductions over time for benchmarking and retrofit efforts.
c	Join US DOE's Better Buildings Program	Partnership/Advocacy	Receive technical assistance, peer-to-peer knowledge sharing, and national recognition for improving building energy use.
d	Upgrade and Install New Technology in Public Buildings	Physical Change	Reduce energy use and costs, saving taxpayers money.
e	Conduct a "Challenge" Among School Users	Program/Plan	Encourage energy savings through behavioral change, saving taxpayers money.
f	Replace Streetlights with Color-Appropriate High-Efficiency LEDs	Physical Change	Reduce energy use and costs related to streetlights, saving taxpayers money.
g	Encourage Other Governments to Improve Building Efficiency	Partnership/Advocacy	Reduce energy use and costs, saving taxpayers money.

GOAL 2:

Improve Energy Efficiency of Private Properties



PUBLIC HEALTH

We discussed energy efficiency for public properties on the previous page. Making private properties—our homes and businesses—more energy efficient can reduce our energy costs, which are among the highest in the United States.

Energy costs are imposing economic hardship on many Hartford families. As Operation Fuel has reported, for struggling house-



ECONOMIC DEVELOPMENT

holds, “home energy costs threaten not only the ability... to retain access to energy services, but also threaten access to housing, food, medical care and other necessities of life.” In Hartford, the average energy burden (energy bill as a percent of income) for households at the 50% federal poverty level is a whopping 33%, and the average per-household home energy affordability gap is \$1,922 per year. The federal Low-



SOCIAL EQUITY

Income Home Energy Assistance Program covers only 21% of the state’s total home energy affordability gap.

There are programs that can help. Many Hartford families income-qualify for a free home energy audit. For commercial property owners, the CT Green Bank has a number of programs to finance energy efficiency with favorable payback periods.

#	STRATEGY	TYPE	PURPOSE
a	Advocate for More Energy Efficient Statewide Building Code	Partnership/Advocacy	Reduce energy use and costs for all buildings through more rigorous statewide standard for energy in buildings.
b	Conduct a "Challenge" Among Private Commercial Building Owners	Program/Plan	Encourage energy savings through infrastructure improvements and behavioral change.
c	Encourage Residents to Sign Up for EnergizeCT Energy Audits	Program/Plan	Make residential properties more energy efficient and more comfortable.
d	Enroll Commercial Property Owners in Green Bank Programs	Education/Outreach	Educate commercial property owners in all neighborhoods on how CT Green Bank programs (such as C-PACE) can reduce energy and save money.
e	Encourage Energy Performance Reporting for Buildings	Education/Outreach	Ensure that owners and potential buyers make informed decisions based on energy performance of a building.



Families who earn less than 60% of the state's median income qualify for free EnergizeCT energy audits and for free improvements by certified technicians that make homes more comfortable.

GOAL 3:

Increase Renewable Energy Use



PUBLIC HEALTH

If we have to use energy, it is better if that energy comes from renewable sources like the sun and wind than fossil fuel sources. Using renewable energy instead of fossil fuels can help reduce harmful emissions in the air and reduce the amount of greenhouse gases affecting our climate.

Through government incentives, technological innovation, and the free market, re-



ECONOMIC DEVELOPMENT

newable energy—and particularly solar energy—is becoming more readily available. Hartford must do its part in promoting policies and programs that facilitate access to renewable energy. Already, the City has developed several solar projects and brought discounted solar programs to residents.

Hartford has also been able to take advantage of state policies promoting renewable



SOCIAL EQUITY

energy. Specifically, it has benefitted from the CO₂ auction proceeds of the state's Regional Greenhouse Gas Initiative (RGGI), which established a cap and trade system that raises money for states. Those proceeds are disbursed to Hartford through the Connecticut Energy Efficiency Fund and the Connecticut Green Bank, to finance specific projects and to promote renewable energy development.



Hartford has a 1 MW solar array on top of its now-capped landfill in the North Meadows, which saves taxpayers money while repurposing an environmental liability.

#	STRATEGY	TYPE	PURPOSE
a	Improve Approval Process for Public Renewable Energy Projects	Policy/Code	Formalize team-based approach to vetting projects in accordance with procurement, legal, and engineering policies.
b	Reduce Permitting Costs for Private Renewable Energy Projects	Incentive	Reduce financial barriers to private use of renewable energy, particularly solar.
c	Enroll as a City in SolarizeCT Campaign	Program/Plan	Encourage homeowners to sign up within 18-week window for discounted bulk solar.
d	Encourage Homeowner Enrollment in Solar for All Campaign	Program/Plan	Encourage homeowners to sign up within 18-month window for low-cost solar leasing.
e	Advocate for Shared Solar for All	Partnership/Advocacy	To change state law so Hartford families can share solar when they cannot have their own solar because of income, rental status, or property characteristics.

GOAL 4:

Encourage Clean Energy Vehicles



PUBLIC HEALTH

Most cars emit toxic fumes that cause not only climate change, but also asthma and other respiratory diseases. Replacing conventional cars with clean energy vehicles (or bicycles) would mean cleaner air, with fewer pollutants, for us all to breathe. These vehicles also require less maintenance, which saves on costs over the long run.

Clean energy vehicles include, for the pur-



ECONOMIC DEVELOPMENT

poses of this Climate Action Plan: fully electric vehicles, hydrogen-fueled vehicles, and hybrid cars which are partially electric. Consumers are buying these types of vehicles in greater quantities, thanks to government incentives and innovations in the market.

We can help speed the rates of adoption by increasing the number of EV charging and hydrogen fueling stations, which creates in-



SOCIAL EQUITY

frastructure that lets owners of the vehicles know they will have a place to charge. We can also change our policies to facilitate or incentivize clean energy vehicles.

The public sector also has a role to play in replacing conventional vehicles in fleets with clean energy vehicles. Lower-emissions diesel vehicles might be an alternative where clean energy vehicles are not available.

#	STRATEGY	TYPE	PURPOSE
a	Provide Reduced Cost Parking for EV, Hydrogen, and Hybrid Vehicles	Policy/Code	Encourage use of clean energy vehicles, improving air quality, where fossil fuel vehicles would otherwise be used..
b	Increase the Number of EV Charging and Hydrogen Fueling Stations	Physical Change	Provide more reliable infrastructure for clean energy vehicles to speed rate of adoption.
c	Assess Environmental Impact of City Fleet Vehicles	Inventory/Assess	Draft a schedule for appropriate, cost-sensitive replacement of current fleet.
d	Replace Passenger Vehicles in City Fleet with Clean Energy Vehicles	Physical Change	Reduce the City's transportation-related emissions, resulting in cleaner air, in accordance with assessment.
e	Encourage Conversion of School Buses to Clean Energy or Diesel Retrofit	Physical Change	Reduce the school system's transportation-related emissions, resulting in cleaner air.



The electric vehicle charging station at the headquarters of the Department of Public Works.

GOAL 5:

Increase Energy Resiliency



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

Resiliency means being able to recover quickly when problems arise. In the case of energy, we want to be sure everyone in Hartford can rebound when a power outage occurs. Resiliency is important not only for businesses who need to keep running during a storm, but also for residents who need electricity to meet basic needs. Hospitals and grocery stores are the kinds of critical care facilities that need resiliency most.

How can we ensure a more resilient city when it comes to energy? The primary way is making sure that Hartford has access to a diverse array of local energy generating sources that stay on even when everyone else's power doesn't. A microgrid developed by City Hall, which opened in 2017, will help make sure this happens for the Parkville neighborhood. Using a clean-burning fuel cell, the microgrid will supply power to the

Parkville Elementary School, Dwight Branch Library, Parkville Senior Center, Charter Oak Health Center, a gas station and a grocery store.

The City is also exploring innovative ways of permitting, building, and financing new resiliency projects, including forming an energy improvement district and advocating for making local generation of energy easier.



Officials cut the ribbon for a 800 kW fuel cell microgrid in the Parkville neighborhood, which will power public buildings as well as a gas station and grocery store during a grid outage.

#	STRATEGY	TYPE	PURPOSE
a	Promote Construction of More Microgrids, Separate from the Primary Grid	Physical Change	Strengthen resiliency of neighborhoods during grid outages.
b	Utilize Energy Improvement District to Explore Resiliency Projects	Program/Plan	Explore how public energy district can enhance resiliency through new projects.
c	Advocate for Changes in Net Metering Cap for Cities	Education/Outreach	Enable the City to expand solar on the landfill and other renewable energy projects, saving taxpayer costs and diversifying local energy generation.

RESIDENTS CAN:

- Get a no-cost or low-cost home energy audit through Energize CT
- Switch light bulbs to LED by participating in one of the City's light bulb swaps
- Put solar on your home through programs sponsored by the CT Green Bank
- Encourage your child's K-12 school to participate in the "eemsarts" energy education program



Hartford resident **JUSTIN RODRIGUEZ** wraps hot water pipes as part of a home energy efficiency assessment. He recently graduated from the weatherization program of Capital Community College, which is supported by the Urban League of Greater Hartford. The program trains residents like Justin for jobs in the green economy.



WHAT CAN YOU DO?

BUSINESS OWNERS CAN:

- Get a no-obligation, no-cost energy audit through Small Business Energy Advantage program
- Save money through Energize CT or the CT Green Bank C-PACE programs, which finance energy improvements
- Participate in the city's new energy improvement district
- Switch light bulbs to LED and put fixtures on automatic dimmers and switches



PAUL BREGLIO, President of Crest Mechanical at 41 Walnut Street, used financing from the CT Green Bank's C-PACE program to jumpstart energy efficiency projects in his 34,500 square foot building. After a project cost of \$145,000, he expects to save more than \$400,000 over the next twenty years. Now that's good business sense.

ACTION AREA B:

In this action area, our overall vision is nutritious food that is locally grown or non-carbon-intensive, and is readily available across all neighborhoods, leading to improved health and greater resiliency for area families.

Hartford has been a leader in food policy for decades, making it well positioned to tackle the food-related implications of climate change. In 1991, it became one of the first cities in the country to establish an advisory commission on food policy, which is still active today. Hartford has a network of 8 farmers' markets and 24 community gardens and farms. Recent changes to the zoning code further encourage urban agriculture and require convenience stores to carry fresh produce.

Despite these successful institutions and programs, Hartford remains the state's most food insecure municipality, due to high levels of poverty and a lack of local food production. In the future, Hartford's food insecurity could be made worse by the food system's vulnerability to climate change. Hartford is designated as a quasi-food desert, because although physical access is not severely limited, public knowledge about food accessibility is an issue.

It is critical to ensure that all people in Hartford have access to healthy food. A focus on the local food economy can give neighbors the necessary supports for better health and employment.

FOOD



- Goal 1: Cultivate Local Food Production
- Goal 2: Ensure Access to Healthy Food
- Goal 3: Divert Food from the Waste Stream
- Goal 4: Reduce Carbon Intensity of Food
- Goal 5: Increase Food Resiliency

Above: The Knox education coordinator leads a community preparation of the first meal from a new cob oven at the expanded community garden on Earle Street.

ROBUST LOCAL ADVOCACY



Created the Advisory Commission on Food Policy in 1991, one of the oldest such commissions in the country.

8 FARMERS' MARKETS



Arranged for local farmers to bring fresh, healthy food to neighborhoods across Hartford, many accepting SNAP.

24 COMMUNITY GARDENS



Encouraged local food production, reducing distribution-related emissions and serving over 350 local families.



WHAT WE'VE DONE, TOGETHER

ZONING FOR URBAN AGRICULTURE



Adopted zoning code in 2016 that encourages urban agriculture, including beekeeping and henhouses.

SCHOOL-BASED PROGRAMS



Educated students in half of Hartford public schools about food and installed school gardens in 2016-2017.

MOBILE MARKETS



A mobile market and a teaching kitchen bring fresh food and demonstration classes into neighborhoods.

GOAL 1:

Cultivate Local Food Production



PUBLIC HEALTH



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SOCIAL EQUITY

Cultivating local food production has several long-lasting benefits. When people grow or are educated about food, they are more likely to make healthy choices. When policies support local farmers and food processors, a micro-economy can thrive. Investing in our community's micro-entrepreneurs can create a more equal society. These 7 strategies highlight how the public and private sectors can facilitate food production.



Representatives of Cigna present Keney Park Sustainability Project with a check to support construction of a hydroponic facility that will allow youth to learn to grow basil year-round in a greenhouse located on City-owned land in Keney Park. These kinds of public-private partnerships are essential to advancing many of the goals in this Climate Action Plan.

#	STRATEGY	TYPE	PURPOSE
a	Assess City-Owned and Blighted Property Suitable for Urban Agriculture	Inventory/Assess	Identify and assess opportunities for urban agriculture, both permanent and temporary, in underutilized lots.
b	Dispose of City-Owned and Blighted Property Suitable for Urban Agriculture	Program/Plan	Establish a process for putting underutilized lots to urban agriculture use.
c	Assess Impact of Zoning Code Changes for Urban Agriculture	Inventory/Assess	Measure new permits for community gardens, urban farms, and farmers' markets.
d	Promote Planting and Care of Fruit and Nut Trees	Program/Plan	Provide local food source while providing shade and cooling.
e	Adopt Policy to Encourage Public Procurement of Locally Grown or Produced Foods	Policy/Code	Keep money in local food economy.
f	Promote Shared Commercial Kitchens and Food Incubators	Program/Plan	Catalyze launch of small, local catering companies.
g	Support and Enhance Community and School Gardens Citywide	Partnership/Advocacy	Work with community and school garden operators to maximize local food production across all neighborhoods.
h	Create "Buy Local" Food Campaign	Education/Outreach	Work with chefs, restaurants, and institutional service providers to create education campaign about local food.

GOAL 2:

Ensure Access to Healthy Food



PUBLIC HEALTH

Improving access to fresh, healthy food—at grocery stores, farmers' markets, schools and other centers of community, and the regional market—can give more people from all neighborhoods in Hartford a better chance at healthier lives.

Unfortunately, the accessibility of fresh food within Hartford city limits is limited, and Hartford is classified as a "quasi-food



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desert." Physical distance to grocery stores is not necessarily the most significant barrier to access; often, the internal and external appearance of grocery stores deters shoppers.

Hartford is also home to a Regional Food Market, which specializes in wholesale food and has a farmers' market. Unfortunately, it is outdated, difficult to access, open at odd



SOCIAL EQUITY

hours, and nearly unknown to local residents.

Finally, neighborhood farmers' markets are only open at very limited times: usually once a week, on a weekday, and only for a few hours. And not all farmers' markets accept public food benefits, which means that the fresh foods they sell may be out of reach to our most food insecure residents.

#	STRATEGY	TYPE	PURPOSE
a	Advocate for State to Revitalize Regional Food Market	Partnership/Advocacy	Improve access and user experience at little-known regional wholesale market.
b	Educate Small Stores and General Public About Regional Market	Education/Outreach	Ensure private parties who could benefit from wholesale-priced food know it exists.
c	Adopt School Policy Prioritizing Fresh Foods and Food from School Gardens	Policy/Code	Ensure students in Hartford public schools receive fresh foods and foods grown on-site.
d	Create Food Pantries at Community Colleges and Hospitals	Program/Plan	Provide food in locations where the population may be food insecure (including often-underserved college students and undernourished patients).
e	Create Incentives for Grocery Stores in Underserved Neighborhoods	Incentive	Enable all Hartford residents to access a full-service grocery store, and thus reduce number of residents living in a food desert.
f	Increase Awareness for Families Receiving Public Food Benefits on Healthy Food Options	Education/Outreach	Ensure that families reliant on public food benefits know where they can get local, healthy food, including at farmers' markets that accept their benefits.
g	Ensure All Farmers' Markets Accept Public Food Benefits	Partnership/Advocacy	Provide access to local fresh food to all Hartford residents, including those reliant on public assistance such as the SNAP program.

GOAL 3:

Divert Food from the Waste Stream



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

The vast majority of the food that gets thrown away should never have been put in the trash. When food is thrown away unnecessarily, it either clogs our landfills or is incinerated. In both instances, discarded food emits greenhouse gases like methane as it decomposes or is burned. We would reduce greenhouse gases if we removed food from the garbage. (The same is true of non-food organic waste, covered in greater

detail in the "Waste" section of this Plan.)

One strategy to reduce the food in the trash is composting: controlled decomposition that creates fertilizer that can be used by gardeners and landscapers. Home composting is being done all around Hartford, including by the residents of the Billings Forge housing complex. Restaurants, hospitals, and other large-scale food waste

producers can compost or send food waste to an anaerobic digester.

Other strategies to remove food from the waste stream are education about meal planning and greater food recovery and "recapture" programs.



Education about the importance of composting is already happening at some community events, but more can be done to raise awareness.

#	STRATEGY	TYPE	PURPOSE
a	Prevent Food Waste Before It Occurs	Education/Outreach	Educate on proper way to store or freeze food, on meal planning, on the ongoing utility of "ugly produce."
b	Institute Food Waste Recovery and Redistribution Program at Retail Store(s) and Restaurant(s)	Program/Plan	Adopt best retail models for food waste recapture, including efforts that reduce food costs.
c	Expand Pilot Composting Program	Program/Plan	Divert compostable scraps from waste stream, saving taxpayers money and promoting green jobs.
d	Create "Recaptured Food" Event	Education/Outreach	Inspire creativity in use of foods that may have otherwise been thrown out.
e	Advocate for Expansion of State Composting Requirement	Partnership/Advocacy	Expand the number of businesses that must engage in mandatory composting.

GOAL 4:

Reduce Carbon Intensity of Food



PUBLIC HEALTH

The food production system is a significant source of greenhouse gas emissions and comprises 15.6% of the total energy usage in the United States. We must therefore focus on the “carbon intensity” of food—that is, the amount of carbon emitted per unit of energy consumed by the production of particular foods from particular places.

Red meat, as one example, is highly carbon-



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intensive, requiring a tremendous amount of energy. Hartford’s encouragement of sustainable food production, which focuses on alternatives to red meat, can reduce the amount of energy used to produce food.

The distribution of food, which is part of the food production system, also produces transportation-related greenhouse gases that contribute to climate change. A fre-



SOCIAL EQUITY

quently cited study from 1994 demonstrated that on average, food travels 1,500 miles from farm to plate, usually in diesel-powered trucks. It’s true here: in our New England region, 90 percent of food consumed is produced outside the region.

Studying the patterns of food distribution in Hartford will help reduce our carbon footprint.

#	STRATEGY	TYPE	PURPOSE
a	Promote Alternatives to Consumption of Red Meat	Education/Outreach	Reduce Hartford's consumption of red meat, the highest carbon-intense food by far.
b	Develop Food Carbon Intensity Index	Inventory/Assess	Identify which foods are traveling farthest to market and which foods can be produced more efficiently in the region.



The vegetables, legumes, and fruits produced by Hartford families at the Watkinson Community Garden have a very low carbon footprint.

GOAL 5:

Increase Food Resiliency



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

Having a resilient food system means ensuring food is readily available—and reasonably priced—for all stakeholders during difficult growing conditions and emergencies. Emergencies may include extreme weather, times of political instability, or military action.

Hartford will be challenged to create a truly resilient food system because we have so

much food insecurity even when there are not emergencies. According to the USDA, food insecurity means that “at times during the year, the food intake of household members is reduced and their normal eating patterns are disrupted because the household lacks money and other resources for food.” With high poverty levels and one in 4 Hartford residents living in food deserts, we are the most food insecure mu-

nicipality in the state. Food insecurity will only worsen with climate change.

To strengthen our food system, we should empower communities to grow their own food (see Goal 1, page 34). We should facilitate indoor growing that continues regardless of weather. And we should ensure our most vulnerable residents can plan for, and have access to, food in times of emergency.



At the annual meeting of the Hartford Food Policy Advisory Commission, which convenes at Billings Forge, dozens of leaders plan for and shape the resilience of our regional food system.

#	STRATEGY	TYPE	PURPOSE
a	Facilitate Commercial Indoor Farming	Program/Plan	Ensure year-round production of produce through easy permitting and incentive program.
b	Educate Residents on Food Planning for Emergencies	Education/Outreach	Ensure residents are informed about keeping an adequate food supply before an extreme weather event occurs.
c	Create a Plan for Food Distribution in Emergency Situations	Program	Ensure residents who are unable to plan for emergencies are still able to access food.

RESIDENTS CAN:

- Participate in community gardening at one of 2 dozen gardens citywide
- Use SNAP benefits at the several local farmers' markets that double benefits
- Eat less red meat and dairy to minimize food-related carbon footprint
- Volunteer time with a community organization specializing in growing, food recovery, or compost



Urban farmer **SALVADOR CASALES** grows produce in Hartford, including an extensive selection of peppers that he sells at local farmers' markets through his incubator business, Barbecho's Harvest. Salvador got started with help from Knox, an organization overseeing 20 community gardens.



WHAT CAN YOU DO?

BUSINESS OWNERS CAN:

- Support the local food economy by sourcing ingredients and products from community producers
- Support SNAP recipients' access to healthy food
- Receive tax benefits for donating food to organizations like Foodshare and CT Food Bank
- Reduce food waste by ordering appropriately and using a composting service



JENIFFER PEREZ CARABALLO manages the SNAP program at the farmers' market of Billings Forge Community Works, which also runs 2 cafes, a workforce development program, and a catering company. She says climate change has affected the growing season for local farmers, significantly diminishing productivity.

ACTION AREA C:

In this action area, our overall vision is landscapes filled with trees and meadows that together mitigate the effect of high heat days and flooding, provide ecosystem services, absorb and filter runoff, offer recreation, and clean our air.

Hartford is a compact urban city with often-overlooked natural resources that provide tremendous public benefits.

Few cities can rival Hartford's magnificent system of public parks and cemeteries, which encompass over 2,000 acres of green space. The city boasts America's first public park (Bushnell), and by the 1930s, Hartford had the highest proportion of park acreage per capita in the country. The city has been designated a federal "Urban Bird Treaty" city, recognized for providing essential habitat. Unfortunately, investment in public parks and cemeteries has been declining since the 1960s.

A "Tree City USA" for 23 years, Hartford has 25% canopy coverage. Yet city budget cuts, disease, pests, time (aging), invasives, drought, and other extreme weather threaten our trees.

The City recognizes these issues and in recent years has developed public-private partnerships to help maintain parks, revised its zoning code, and passed a powerful Tree Ordinance. Further improving the health and quality of our landscapes will in turn benefit our air, health, and quality of life.

LANDSCAPE



- Goal 1: Improve Tree Canopy Coverage
- Goal 2: Promote Meadows and Native Wildflower Fields
- Goal 3: Improve Public Park Facilities
- Goal 4: Enhance Human-Made Landscapes
- Goal 5: Increase Resiliency of Trees and Landscapes

Above: Hartford residents enjoy the recently renovated George Day Park, in the historic Parkville neighborhood.

ORDINANCE PROMOTING TREES



Passed a law in 2011 to expand our urban forest, empower the City Forester, and create a Tree Commission.

INCREASED TREE CANOPY



Planted 1,000 trees each year since 2012, resulting in tree canopy covering 25% of the city.

ACTIVE COMMUNITY ORGANIZATIONS



Harnessed volunteer enthusiasm for our historic parks through the Parks Commission and Friends groups.



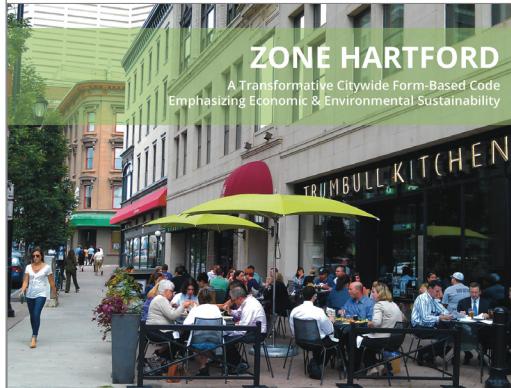
WHAT WE'VE DONE, TOGETHER

RIVERFRONT REVITALIZATION



Revitalized a portion of the riverfront through a partnership between Riverfront Recapture, the City, and the MDC.

ZONING FOR PLANTS & ANIMALS



Adopted laws in 2016 to require tree canopy coverage, establish waterway buffers, and increase pervious coverage.

THE IQUILT WALKING PLAN



Invested in the iQuilt Walking Plan, connecting two major parks with cultural and natural assets.

GOAL 1:

Improve Tree Canopy Coverage



PUBLIC HEALTH



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SOCIAL EQUITY

Improving tree canopy coverage across all neighborhoods can provide significant benefits that can help us both mitigate, and adapt to, the impacts of climate change.

Hartford's trees provide ecosystem benefits that exceed \$5 million in value annually. First, they remove 73 tons of major air pollutants each year. Second, they annually remove more than 5,000 pounds of car-

bon monoxide, remove more than 100,000 pounds of ozone, and sequester more than 11,000 tons of carbon. Third, they provide shade that saves 3,843,654 kWh in annual energy use.

Given all of these benefits, trees' replacement value is \$600 million, the equivalent of nearly 20% of Hartford's real property grand list. While we have in recent years

planted up to 1,000 trees per year, a more aggressive planting strategy can ensure that these benefits expand, including in the neighborhoods (many impoverished) that lack trees. This Plan also recommends working through the Tree Commission, the City Forester, and others to ensure that a proper inventory of trees occurs, and that planning addresses arboreal inequities by identifying priority tree planting locations.



Students from Hartford Public High School plant a tree in a parking lot island during the school's annual Green Apple Day beautification effort.

#	STRATEGY	TYPE	PURPOSE
a	Plant and Nurture 2,500 Trees Per Year	Physical Change	Increase the number of trees across all neighborhoods with ultimate goal of 40% canopy coverage citywide.
b	Assess Impact of Zoning Code Changes for Tree Canopy Coverage	Policy/Code	Document increase in the number of trees across all neighborhoods.
c	Assess Status of Tree Canopy Every 5 Years	Inventory/Assess	Account for decreases, increases, and health of trees citywide.
d	Review and Amend Master Tree Plan Every 5 Years	Program/Plan	Create citywide approach to planting, maintenance, care, and long-term health of trees.
e	Develop Policy Creating an "Adopt a Street Tree" Program	Policy/Code	Finance tree planting and encourage maintenance of canopy.

GOAL 2:

Promote Meadows and Native Wildflower Fields



PUBLIC HEALTH

Promoting meadows and wildflowers is a budget-friendly, climate conscious landcare approach.

Encouraging meadows as alternatives to manicured lots can improve the biodiversity of our city, have a cooling effect, and increase the number of plants and grasses processing carbon in the atmosphere. Planting wildflowers and clover also allows



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us to meet our climate goals, while creating pollinator pathways for bees that support our ecosystem.

When land is allowed to remain a meadow or to be filled with wildflowers, regular mowing becomes unnecessary. The City DPW has already established no-mow areas in public parks, and might consider creating more. We might also encourage



SOCIAL EQUITY

private property owners on large lots to stop mowing, subject to blight and health ordinances. Refraining from mowing saves both gas and costs.

Through education, we might promote alternatives to common grass seeds. These alternatives require less watering, which is particularly important during times of drought.

#	STRATEGY	TYPE	PURPOSE
a	Establish No-Mow Areas in Public Parks or Along Rights of Way	Physical Change	Create meadows that facilitate native wildflower growth and pollinators.
b	Encourage Private Property Owners with Large Lots to Go No-Mow	Education/Outreach	Create meadows that facilitate native wildflower growth and pollinators.



The City Department of Public Works has identified no-mow areas throughout city parks, including this area by the Keney Park golf course.

GOAL 3:

Improve Public Park Facilities



PUBLIC HEALTH



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SOCIAL EQUITY

An investment in public parks will ensure that more people feel comfortable accessing and appreciating nature in our shared spaces. In turn, parkgoers can become champions for our environment.

Hartford's park system was built on a strong foundation, though today, it faces some challenges. One persistent issue, shared by municipal parks across the state,

is a decline in funding and a corresponding decline in the number of City employees devoted to parks, which leads to maintenance delays and illegal dumping.

Despite these issues, a citywide master plan for parks was recently developed, identifying priorities for improvements in specific parks. A signage program has also been adopted, to improve wayfinding and acces-

sibility. Realizing the goals of these plans should be a priority.

Simultaneously, strengthening relationship with "Friends" groups and other private partners can help reduce burdens on City DPW staff. A recent National Park Service grant for technical assistance should be used to complement existing efforts and enhance connectivity between parks.



#	STRATEGY	TYPE	PURPOSE
a	Construct in Phases Park-Specific Goals of Capital City Parks Plan	Physical Change	Implement vision created for improvements in specific parks, in phases as finances allow.
b	Partner with Private Entities for Improvements	Partnership/Advocacy	Reduce taxpayer costs for maintenance and improvements through targeted partnerships.
c	Replace Signage in Parks Citywide	Physical Change	Improve wayfinding, harmonize visuals, and increase utilization of public parks.
d	Work with NPS to Create Connectivity Plan for Parks	Program/Plan	Develop linkages between parks and their surrounding neighborhoods through bike and pedestrian routes.
e	Develop a System to Better Enforce Illegal Dumping Laws	Enforcement	Improve attractiveness of parks, deter crime, and clean up property.

GOAL 4:

Enhance Human-Made Landscapes



PUBLIC HEALTH

People play a significant role in altering the natural environment. Hartford's industrial past has left a legacy of pollution, much of which remains embedded in our soil. We call soil-polluted sites "brownfields," and we must target key sites for clean-up funding.

We must also deal with modern decisions about how to alter landscapes. The City Tree Ordinance and the City Zoning Code



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work together to ensure that property owners plant and maintain trees and use sustainable landscaping practices. The zoning code also provides bonuses for "green roofs," which cool the city more than regular roofs and thus mitigate the effects of climate change. Assessing the impact of these laws, and enforcing their provisions, can help us enhance man-made landscapes further.



SOCIAL EQUITY

Cemeteries, often overlooked, provide carefully planned green space with environmental benefits. Public-private partnerships could help clean cemetery grounds, implement improvements, repair monuments, and implement master plans.

We should also take opportunities to incorporate work of local artists in open spaces, wherever feasible.

#	STRATEGY	TYPE	PURPOSE
a	Target Brownfield Remediation Investment in High-Opportunity Locations	Program/Plan	Improve soil quality while harnessing real estate development potential.
b	Enforce the Tree Ordinance Vigorously	Enforcement	Use fines for Tree Ordinance Violations to build up Tree Account, which will support future planting.
c	Explore Creation of Pocket Parks in Commercial Corridors	Program/Plan	Create green space in highly trafficked commercial areas.
d	Develop Policy Creating an "Adopt a Median" Program	Policy/Code	Improve maintenance of landscaping in highly visible areas.
e	Assess Impact of Zoning Code Changes for Green Roofs	Inventory/Assess	Measure incidence of green roofs in dense areas where bonuses provided by zoning code.
f	Partner with Private Entities for Cemetery Improvements	Partnership/Advocacy	Ensure our historic cemeteries are more appropriately maintained green spaces.



A green roof filled with trees, flowers, and native plants beautifies and cools Constitution Plaza in the area of the Connecticut Science Center, Convention Center, and Phoenix Building.

GOAL 5:

Increase Resiliency of Trees and Landscapes



PUBLIC HEALTH

In the case of trees and landscapes, resiliency means ensuring recovery and restoration in the case of drought, disease, infestation, or other threatening condition.

Hartford's trees are highly vulnerable to natural causes of death, storms driven by climate change, and pests, including the new threat of emerald ash borer, which can kill a tree within 2 to 3 years of infestation. At



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the same time, invasive plant species such as bittersweet and Japanese knotweed continue to expand their deadly reach. Finally, an aging canopy raises concerns.

We can improve the resiliency of our canopy. Below, we focus first on ash trees, because despite representing only 2% of the tree canopy, ash trees are among Hartford's oldest trees and provide consider-



SOCIAL EQUITY

able shade coverage and corresponding climate change mitigation benefits. Removing dead ash trees felled by the emerald ash borer will cost much more than treatment and education.

To further strengthen resiliency, we should also diversify our tree canopy, at a minimum assessing the impact of recently adopted diversity planting requirements.



The City Forester (center) in Keney Park, confirming in 2015 that the emerald ash borer, an invasive species targeting ash trees, reached Hartford.

#	STRATEGY	TYPE	PURPOSE
a	Treat Public Trees to Prevent the Emerald Ash Borer	Program/Plan	Develop short- and long-term strategies to improve public ash tree resilience against emerald ash borer epidemic.
b	Educate Private Parties about Emerald Ash Borer	Education/Outreach	Ensure that private parties, large and small, are aware of threat to city's many ash trees.
c	Prioritize Maintenance of Public and Private Trees	Program/Plan	Maintain a significant population of large, healthy, older trees, which produce most of the ecosystem benefits.
d	Assess Impact of Zoning Code Changes for Tree Diversity	Inventory/Assess	Measure whether zoning code is reducing the tree canopy's susceptibility to epidemics, including the 10-20-30 rule.

RESIDENTS CAN:

- Gather your friends and neighbors to organize a park clean-up, planting, or maintenance project
- Plant wildflowers and establish "no-mow" areas in appropriate places around your home
- Monitor your property for invasive species and your ash trees for emerald ash borer
- Call 311 to report illegal dumping in our parks and unauthorized tree removals



Hartford's "Tree Lady," **CHARMAINE CRAIG**, celebrates the revitalization of a North End garden. Influenced by a childhood spent on her grandfather's farm, Charmaine has spent decades improving Hartford residents' access to healthy trees and food. She continues to serve as a commissioner on the City's Tree Commission.



WHAT CAN YOU DO?

BUSINESS OWNERS CAN:

- Sponsor free community activities in parks, such as Nightfall, Movies After Dark, yoga classes, cultural festivals, or holiday fireworks
- Work with a "Friends" group or one of several nonprofit organizations to beautify a park or cemetery
- Plant a tree, or a whole grove of trees
- Convert unnecessary parking spaces into green space



Volunteer teams from **THE HARTFORD** renew the landscape at the corner of Homestead Avenue and Garden Street. Employees from The Hartford and other local companies make a big difference helping to keep our city green through clean-up days like this one, organized by Knox, as well as philanthropic support for worthy programs.

ACTION AREA D:

In this action area, our overall vision is a multi-modal, affordable transportation network with safe biking and walking options and fewer vehicle-related emissions, which improves air quality and cuts asthma rates.

A hundred years ago, streetcars transported people efficiently along our major avenues. And Hartford was a transportation innovator: in 1878, the Pope Manufacturing Company started producing "safety bicycles," and in 1902, Hartford became the birthplace of the electric vehicle.

After streetcar service ended in 1941, the rise of the automobile began in earnest. I-84 and I-91 were built, while we neglected bikes and buses. Now, 2.1 million vehicle miles are traveled in Hartford daily, some by about 90,000 commuters.

Unfortunately, cars contribute to climate change and pollute our air. And people who drive cars do not enjoy the health and exercise benefits of walking and biking. So we must facilitate other modes of travel. Hartford has made some progress, including passing a Complete Streets Policy and an award-winning zoning code, becoming a Bike Friendly Community, and promoting electric vehicles. On the horizon are high frequency commuter rail service and the reconstruction of part of I-84, which will open up land for parks and new development. The steps in this Plan complement these efforts, and can help improve our quality of life while addressing climate change.



- Goal 1: Increase Walking and Biking**
- Goal 2: Increase Transit Use**
- Goal 3: Decrease Emissions from Vehicles**
- Goal 4: Make Streets Safer**
- Goal 5: Increase Transportation Resiliency**

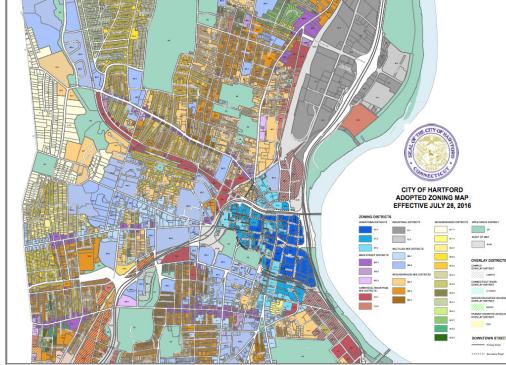
Above: Instructors in a bike clinic offered at Five Corners in the North End, sponsored by Park Street-based BiCiCo, Catholic Worker House, and the Hartford Community Loan Fund.

COMPLETE STREETS POLICY



Passed a law in 2016 ensuring that Hartford streets will protect the safety of bikers and walkers, not just drivers.

TRANSIT-ORIENTED DEVELOPMENT



Created districts in 2017 near CTfastrak to spur development that will reduce vehicle miles traveled.

A BICYCLE-FRIENDLY COMMUNITY



Awarded Bronze recognition from League of American Bicyclists in 2016 for bike-friendly practices.

WHAT WE'VE DONE, TOGETHER

CTFASTRAK SYSTEM



Outpaced ridership projections for regional bus-rapid transit system, with expansion expectations.

ZONING FOR BIKES



Adopted in 2016 new zoning rules to reduce car parking, require and incentivize bike parking, and create better streets.

BIKE EDUCATION



Offered bike safety and repair courses through groups like BiCi Co. and Catholic Worker House.

GOAL 1:

Increase Walking and Biking



PUBLIC HEALTH

Over a third of greenhouse gas emissions in Connecticut are attributed to the transportation sector. To become a cleaner city, we must facilitate two healthy, emissions-free modes of travel: walking and biking. Together, these modes of travel are sometimes called "active transportation."

In our compact urban city, we have opportunities to dramatically increase active



ECONOMIC DEVELOPMENT

transportation. US Census data shows that the percent of Hartford residents walking or biking to work stands at about 8%. This remains true even though an additional 19% of Hartford residents drive to work within 15 minutes or less. Of course, many people also walk and bike for recreation.

We are already trying to increase mode share of walking and biking through policy



SOCIAL EQUITY

changes (such as the recently adopted Complete Streets Policy and our award-winning zoning code), bike safety and repair education, and providing infrastructure like bike lanes and crosswalks. In 2016, Hartford was recognized as a Bicycle Friendly Community (Bronze) by the League of American Bicyclists, and we are applying for Walk Friendly Community status. The strategies below outline additional steps.



A new bike rack installed by the Center for Latino Progress on Park Street.

#	STRATEGY	TYPE	PURPOSE
a	Draft Complete Streets Plan	Program/Plan	Plan for streets that account for walkers, bikers, and drivers.
b	Establish "Tactical Urbanism" Program	Physical Change	Test bike/pedestrian projects through temporary measures, including parklets, bike lane striping, and buffers.
c	Establish Affordable, Accessible Bike Share Program	Program/Plan	Enable all in Hartford to have access to bikes to support mobility and access to employment in all neighborhoods.
d	Establish More Dedicated Bike Facilities	Physical Change	Create a network of low-stress bike facilities citywide.
e	Convert On-Street Car Parking Spaces to Bike Corrals	Physical Change	Create a network of bike parking in retail corridors.
f	Expand Access to Bike Safety Courses	Education/Outreach	Ensure everyone, including children in schools, can participate in bike safety training courses.

GOAL 2:

Increase Transit Use



PUBLIC HEALTH

Increasing the use of public transportation (transit) can get cars off the road—reducing greenhouse gases—and allow our neighbors to get to jobs and other resources.

Many of our residents rely on public transportation to get around: according to the US Census, about half of Hartford transit riders are transit-dependent. About 15% of Hartford residents live in a household with



ECONOMIC DEVELOPMENT

no access to a vehicle.

At the same time, many of the opportunities in the region no longer exist in the “transit-rich” downtown areas, but in the “transit deserts” of the suburbs. That means that to get to opportunities, many Hartford residents must travel longer distances, on more inconvenient routes. Our transit-dependent residents spend about twice the



SOCIAL EQUITY

amount of time on their commutes than those in private automobiles.

Investments in our intracity bus system (CT-transit), bus rapid transit line (CTfastrak), and new routes (like the Griffin Line, which could connect downtown to Bradley airport or become a trail) are essential to ensure social equity, while reducing greenhouse gas emissions.

#	STRATEGY	TYPE	PURPOSE
a	Advocate to Make CTtransit More Efficient	Partnership/Advocacy	Reduce time spent on the bus, perhaps by moving away from a "hub and spoke" oriented system.
b	Make Bus Stops More Attractive	Physical Change	Make the use of buses more appealing to a wider range of customers.
c	Program Signals to Prioritize Buses	Physical Change	Make bus rides faster and smoother.
d	Advocate for Expansions of CTfastrak	Partnership/Advocacy	Expand popular bus rapid transit service to new communities.
e	Advocate for Reopening of Griffin Line	Partnership/Advocacy	Provide access to passenger rail or bus rapid transit service to Northwest neighborhoods and to Bradley Airport.



Thanks to a massive state investment in developing CTfastrak, the bus rapid transit system, Hartford has several attractive stations that invite new users to try public transit.

GOAL 3:

Decrease Emissions from Vehicles



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

With two interstate highways running through Hartford, a lot of driving happens in our city: approximately 2.1 million vehicle miles traveled daily (including by 90,000 commuters). Most of these cars and trucks pollute our air as they drive. They emit carbon monoxide, nitrogen dioxide, and particulate matter. All told, the emission of greenhouse gases from vehicle exhaust amounts to 800,000 kg of CO₂ per day.

Airborne emissions from vehicles directly harm the health and well-being of Hartford residents. Among other things, these pollutants can exacerbate asthma symptoms. In a 2006 study, researchers found the asthma rate in Hartford to be 20%, which was almost three times the national average that year. Asthma-related school and work absences hinder both personal development and economic growth.

Beyond these local impacts, Hartford's reliance on the automobile as the primary mode to transportation has contributed to the larger global issue of greenhouse gas emissions. Transportation accounts for more than 35% of greenhouse gas emissions in Connecticut. Thus, changes to Hartford's transportation system represent one of Hartford's best opportunities for climate action within the city.



An electric vehicle charging station behind City Hall allows "plug-in" clean energy vehicles to recharge at no cost.

#	STRATEGY	TYPE	PURPOSE
a	Initiate Traffic Signal Synchronization Program	Physical Change	Reduce idling among vehicles and ensure vehicles travel at safer rate of speed.
b	Encourage Businesses to Develop Transportation Demand Management Programs	Partnership/Advocacy	Reduce the number of single-passenger vehicles traveling in and out of Hartford during peak travel periods, working with CTrides.
c	Increase Number of Stations for Car Share Services	Physical Change	Eliminate need for individual car ownership, reducing vehicle miles traveled.
d	Advocate to Strengthen Federal Fuel Efficiency Standards	Partnership/Advocacy	Reduce amount of fuel, and thus emissions, of medium- and heavy-duty vehicles.
e	Encourage Clean Energy Vehicles	Program/Plan	See Goal 4 in "Energy" Action Area.

GOAL 4:

Make Streets Safer



PUBLIC HEALTH

Hartford must make its streets safer to encourage active transportation (which includes walking and biking), which in turn reduces greenhouse gas emissions and improves the health of those walking and biking (see Goal 1, page 50). Safer streets can also help reduce the high rate of automobile-crash-related injuries and deaths in Hartford, which are among the highest in the state.



ECONOMIC DEVELOPMENT

To make streets safer, Hartford has begun to apply the new Complete Streets Policy to street projects. More ADA-compliant crosswalks and ramps have been planned to accommodate users of all abilities. One shop-lined downtown street is sometimes closed to vehicular traffic. And education on bike safety has been more frequently offered, both on-site at nonprofit organizations and during events like "Bike to Work Day."



SOCIAL EQUITY

The strategies below reflect the need to continue to make sharing Hartford's roads safer for everyone, regardless of their preferred mode of transportation. Ranging from adopting the national Vision Zero policy to commit to a goal of no pedestrian fatalities, to improving crosswalk striping and safe routes to schools, this guidance synthesizes best practices for road safety from communities across the nation.

#	STRATEGY	TYPE	PURPOSE
a	Adopt "Vision Zero" Policy in City Code	Policy/Code	Reduce threats of injury to non-motorists through education, design, and enforcement.
b	Reduce Pedestrian and Bicyclist Fatalities	Program/Plan	Make progress toward Vision Zero to ensure zero fatalities by 2040.
c	Calm Traffic	Physical Change	Implement traffic calming in intersections with high rates of crashes.
d	Improve Crosswalks through Striping and Accessibility Improvements	Physical Change	Make walking or using a wheelchair across streets more safe.
e	Coordinate City and School Efforts on Safe Routes to Schools	Program/Plan	Make it easier for schoolchildren to walk and bike to nearby schools.



Pratt Street is often closed to vehicular traffic, welcoming bikers and walkers—including, at left in this photo, an ambassador of the Hartford BID, which offers downtown bikers roadside assistance.

GOAL 5:

Increase Transportation Resiliency



PUBLIC HEALTH

Having a resilient transportation network means ensuring that all members of our community have access to different modes of safe and affordable transportation, even when their preferred mode is unavailable.

Over the last few decades, it seems as if the primary focus of transportation investment has been in the infrastructure and policies that support the private, personal automo-



ECONOMIC DEVELOPMENT

bile. But to ensure resiliency in our transportation system, we must diversify our options, including biking and public transportation. Collaboration with state and regional officials about funding priorities and trail and infrastructure development must also continue.

Beyond mode shift, emergency planning needs to be addressed in earnest, and the



SOCIAL EQUITY

roadway itself must become more resilient through climate-friendly design.

Note that the sharing economy, which offers on-demand pick-up services and car-sharing rental options, also provides new opportunities to increase resiliency in a flexible way. We have encouraged car-share through zoning and might consider more strategies to increase sharing options.



Union Station, the building at right, sits in a busy mixed-use area and functions as a multi-modal hub—including regional trains, intercity and intracity buses, and bikes—which strengthens the resilience of our transportation system.

#	STRATEGY	TYPE	PURPOSE
a	Ensure Development of Emergency Transportation Plan	Program/Plan	Plan for vehicular travel and for transit access for those without vehicles during emergency event.
b	Measure Mode Shift	Inventory/Assess	Increase number of persons who walk, bike, and take transit to work.
c	Integrate Green Infrastructure Into Roadway Design	Physical Change	Expand ability of roadways to absorb and process stormwater during extreme rain or flooding events, ensuring usability.

RESIDENTS CAN:

- Opt to walk, ride a bicycle, take public transportation, or use car sharing, instead of driving or owning a car
- Use regional bus rapid transit and enroll in the CTfastrak Rewards Program
- Advocate for “Complete Streets” projects in your neighborhood that improve walkability and enhance pedestrian safety
- Take advantage of public incentives for electric vehicles



DWIGHT TEAL estimates that, along with his teacher Peter, he has repaired more than 1,000 bikes for local residents as Catholic Worker's primary bike repairperson at 18 Clark Street. Dwight, who biked to classes at Manchester Community College from North Hartford, is a dedicated cyclist and local artist.

WHAT CAN YOU DO?

BUSINESS OWNERS CAN:

- Encourage employees to Park & Ride or commute together
- Provide showers, changing rooms, and indoor bicycle racks on site to encourage bike commuting among employees or residents
- Replace conventional vehicles in your fleet with clean energy vehicles
- Retrofit your parking lot with electric vehicle charging stations



Bike to Work Day is an annual ritual for TRAVELERS, which is a Bronze-level Bike Friendly Business (League of American Bicyclists). The company's downtown headquarters boasts showers, changing rooms, and racks, and employees participate in a Cycling Network. Roughly 25% of employees take the bus to work. Still others carpool.

ACTION AREA E:

In this action area, our overall vision is eradication of the worst trash and blight, and public education that boosts diversion, recycling, and reuse rates—which in turn cuts costs, related emissions, and environmental degradation.

For the past eighty years, Hartford has been the dumping ground for the most of the region's solid waste, due to the two large facilities within its borders: a sanitary landfill and a trash-to-energy plant.

The recently-capped landfill is now an asset. It is topped with 35 acres of solar panels, providing the equivalent of one megawatt of electricity. It also has several pollution control systems, including a gas extraction and collection system to prevent odors and generate electricity, as well as water monitoring equipment.

Meanwhile, in the South Meadows, the State was recently considering relocating the trash-to-energy plant. Given the poor air quality, and environmental degradation associated with waste management, Hartford residents are generally strong proponents of moving the plant out of the city.

More broadly, resident awareness in Hartford is growing, and support for the City to reduce waste and increase recycling has been bolstered. These and other successes have started Hartford on a better path, but critical decisions must be made in the near term to ensure continued progress.

WASTE



- Goal 1: Divert Organic Refuse from the Waste Stream
- Goal 2: Promote Recycling and Reuse in the Public Sector
- Goal 3: Promote Recycling and Reuse in the Private Sector
- Goal 4: Eradicate Litter and Blight
- Goal 5: Increase Resiliency of Waste Facilities

Above: A young model in the Trashion Fashion annual runway show, held in City Hall in 2016 and Infinity Music Hall in 2017.

BRIGHT TEAM



Obtained grant funding in 2016 to hire a dedicated team focused on blight enforcement and redevelopment.

FRACKING & FRACKING WASTE BAN

Natural Gas, Oil, or Other Surface Hydrocarbon Extraction Activities All geologic or geophysical activities related to the exploration for or extraction of natural gas, oil, or other subsurface hydrocarbons including, but not limited to, core and rotary drilling and hydraulic fracturing (i.e., the drilling into the ground and subsequent pumping of water, sand, chemicals, or a combination thereof, to break apart underground rock formations, including shale and non-shale formations, for the purpose of stimulating natural gas, oil, or other subsurface hydrocarbon production); and natural gas waste, oil waste, or other subsurface hydrocarbon waste associated

Amended the zoning code to ban fracking and other mineral extraction activities, and the processing of associated wastes.

RECYCLING IMPROVEMENTS



Facilitated single-stream recycling and increased bin size in 2008, which doubled overall recycling rates.



WHAT WE'VE DONE, TOGETHER

COMPOSTING PILOT



Awarded a RecycleCT grant in 2017 for a pilot composting program at the Billings Forge apartment complex.

MATTRESS RECYCLING



Pioneered a used mattress recycling program in 2011, which was adopted statewide and won awards.

WOOD MANAGEMENT PROGRAM



Won a 2017 RecycleCT grant to help start a program to process woody debris produced in Hartford.

GOAL 1:

Divert Organic Refuse from the Waste Stream



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

Diverting organic refuse from the waste stream means making sure that organic waste—such as food scraps, fallen leaves, and wood debris—is never put in the trash in the first place. We talked a bit about composting in the “Food” action area, so we focus here on non-food organic waste.

Strategies to divert organic waste from the waste stream can include composting and

landscaping practices, as well as more dramatic moves, such as building facilities to handle waste outside of the conventional processes.

These strategies each have environmental benefits, because they reduce the amount of trash trucked to facilities where it is either burned or stockpiled in a landfill. But they also have financial benefits. For exam-

ple, the City saves money on maintenance and trash disposal costs if it refrains from raking leaves after they fall.

Thinking longer term, we suggest the construction of facilities for composting and for wood materials management to process our many trees that die from age or disease. These facilities could provide jobs to residents, an important economic benefit.



Keney Park Sustainability Project uses worms to compost organic material in these piles at the back of the organization's gardening facility.

#	STRATEGY	TYPE	PURPOSE
a	Divert Food from Waste Stream	Program/Plan	See Goal 3 in "Food" Action Area.
b	Compost Non-Food Organic Refuse from Municipal Buildings	Physical Change	Prevent brown paper towels and similar products from entering waste stream, saving taxpayers on tipping fees.
c	Allow Fallen Leaves in Public Parks to Remain in Forested Areas Without Grass	Policy/Code	Allow for decomposition of leaves in place, improving ecosystem health and saving taxpayers on maintenance personnel costs.
d	Require Composting for Grass Clippings and Leaves	Policy/Code	Prevent compostable lawn products from entering waste stream, saving taxpayers on tipping fees.
e	Establish Citywide Composting Facility	Physical Change	Create facility for natural composting, creating green jobs and diverting waste.
f	Establish Citywide Wood Materials Management Facility	Physical Change	Create facility for managing wood debris, creating green jobs and diverting waste.

GOAL 2:

Promote Recycling and Reuse in the Public Sector



PUBLIC HEALTH

Improving reuse and recycling tactics in municipal operations helps us scale efforts that minimize landfill use. At the same time, it helps us to reduce harmful greenhouse gas emissions.

Reducing landfill use also saves money. It costs the City \$0 per ton to dispose of recycling versus \$69 per ton to dispose of trash at the South Meadows facility.



ECONOMIC DEVELOPMENT

As a starting point, we need to make it easier for people to recycle in public facilities and at public events. Visible recycling bins at all public facilities and in-school education could help change behaviors. In addition, the City recently required that organizers of events on public property offer recycle bins, and so it would be useful to see how that requirement is working, and what event organizers need to comply.



SOCIAL EQUITY

In the future, we will also need to consider changes in the way the public sector consumes resources. For example, conscious printing, thoughtful purchasing of goods like office supplies, and careful event management helps to minimize both solid waste and excess energy use embedded throughout product lifecycles. This in turn reduces greenhouse gas emissions and saves the City costs, passed on to taxpayers.

#	STRATEGY	TYPE	PURPOSE
a	Put Recycling Bins at All Public Facilities	Physical Change	Make it easier for everyone to recycle.
b	Enforce Requirement for Recycling Bins at Special Events	Enforcement	Ensure special event organizers use recycling bins.
c	Integrate Education about Recycling and Reuse in Public Schools	Education/Outreach	Integrate education about trash, recycling, and reuse into school programs.



Schoolchildren celebrate recycling at a public street fair in the Frog Hollow neighborhood.

GOAL 3:

Promote Recycling and Reuse in the Private Sector



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

Promoting recycling and reuse in the private sector can help to reduce the amount of trash Hartford produces, turning materials that might have been discarded into valuable assets.

In the past, the City focused on boosting residential recycling, which offsets DPW's disposal costs. (DPW handles trash and recycling for one- to 6-unit residential build-

ings.) The introduction of single-stream recycling and the near-quadrupling of the size of recycling bins have helped to double recycling rates. A popular recycling-focused fashion show and neighborhood block parties also raise awareness for residents.

Despite that good news, some residential neighborhoods do not recycle as often as others, likely due to lack of knowledge

and enthusiasm about recycling. Moreover, there are opportunities to improve recycling among small businesses through technical assistance and multi-unit apartment buildings through enforcement.

In the area of reuse, this Plan recommends that decision-makers consider requiring or promoting alternatives to demolition through a citywide policy.



Trashion Fashion coordinates an annual fashion show (now expanded to 2 other cities), for which designers use only reclaimed materials, to raise awareness about reuse and recycling.

#	STRATEGY	TYPE	PURPOSE
a	Ensure Multi-Tenant Buildings Provide Recycling Containers	Enforcement	Ensure that apartment and commercial building owners enable tenants to recycle, as required by municipal code.
b	Educate the General Public about Recycling	Education/Outreach	Increase rates and enthusiasm for recycling, as well as "Be Cart Smart" program about what can be recycled.
c	Educate about Reuse through a "Be Resourceful" Campaign	Education/Outreach	Encourage residents to buy smart, reuse, borrow/share/rent items, and fix/maintain items.
d	Adopt Deconstruction Ordinance	Policy/Code	Require or promote alternatives to building demolition, such as relocation, deconstruction, and salvage.
e	Provide Technical Assistance to Small Businesses, Including Retail Stores and Offices	Program/Plan	Create program, with priority to underserved and under-represented business owners, to provide technical assistance for improving waste reduction and toxics reduction.

GOAL 4:

Eradicate Litter and Blight



PUBLIC HEALTH

Hartford has a problem with litter and blight. Both diminish our quality of life, release toxic materials into the air as they decompose, and diminish property values across the city. Although addressing litter and blight does not directly affect greenhouse gas emissions, we include it here because litter and blight have harmful effects on the environment, health, and economic security of our neighborhoods.



ECONOMIC DEVELOPMENT

The types of litter most frequently seen in the parks, gutters, and streets of Hartford are plastic bags and food packaging (such as cups and take-out containers). These unsightly items harm birds and animals that ingest them. Their petroleum base means that as they decompose (however slowly), they release toxic gases into the air. While neighborhood cleanups often target this type of litter, we should consider banning or



SOCIAL EQUITY

regulating it, so it is less likely to be tossed aside in the public realm.

Blight involves decomposition on a larger scale: the scale of buildings, and sometimes blocks. Attracting rats and crime, blighted properties raise health and safety concerns. A new blight director for the City is making impressive strides, and we encourage these efforts by supporting enforcement.

#	STRATEGY	TYPE	PURPOSE
a	Conduct Long-Term Anti-Litter Campaign	Education/Outreach	Increase awareness of impact of litter on Hartford's quality of life, property values, and self-perception.
b	Ban Lightweight, Single-Use Plastic Bags	Policy/Code	Join other towns and countries in eliminating animal-killing, non-biodegradable, petroleum-based product from waste stream.
c	Adopt Green Food Packaging Requirement	Policy/Code	Ensure recyclable or compostable food packaging by restaurants.
d	Enforce Blight Ordinance	Enforcement	Improve attractiveness of blighted area, deter crime, and clean up property.



Plastic bags regularly blow up against the chain link fence at Lozada Park, creating visual blight and posing threats to birds and animals.

GOAL 5:

Increase Resiliency of Waste Facilities



PUBLIC HEALTH

What would happen if an extreme weather event flooded the trash incinerator and sludge treatment plant located in the South Meadows, right on the Connecticut River? One third of the state would lose its place to process waste and sludge, and Hartford would suffer an environmental nightmare.

This is the scenario that must be confronted as climate change threatens Hartford. The



ECONOMIC DEVELOPMENT

data shows that warming temperatures will increase the risk of catastrophic flooding events.

We have an opportunity now to advocate at least for the relocation of the trash incinerator. Originally sited in 1973, the plant is a water hog (80 million gallons of River water per day) and attracts 300 trucks daily, all emitting toxic fumes into our air. The plant



SOCIAL EQUITY

itself also emits toxins and odors that waft through surrounding neighborhoods.

Fortunately, the outdated facility will not be financially viable in 5 to 7 years. Hartford residents should continue to advocate for relocation. If it remains in place, we should push for reduced emissions, water use, and transportation frequency to improve the plant's environmental footprint.



This group, including several local environmental justice advocates, focused on issues related to waste and materials management during the 200-person conference at UConn about this Plan.

#	STRATEGY	TYPE	PURPOSE
a	Advocate for Relocation of Trash Incinerator and Sludge Treatment Plant	Partnership/Advocacy	Move vulnerable trash and sludge processing facilities from flood-prone riverside location—to outside Hartford.

RESIDENTS CAN:

- Read up on what Hartford recycles on the DPW website, and recycle glass, plastic, cardboard, and paper
- Consider alternate methods of reuse or recycling for uncommon household items
- Get informed about plastic bags and food packaging
- Consult with guides available at www.hartford.gov/climate to reducing toxic products in your home



Young Hartford residents participating in the Youth Service Corps can harvest and upcycle wood debris thanks to **HERB VIRGO** (at left) and the Keney Park Sustainability Project. These residents learn basic carpentry skills and transform wood formerly bound for the landfill into useful products like benches.



WHAT CAN YOU DO?

BUSINESS OWNERS CAN:

- Provide recycling bins in key locations, at a minimum adjacent to every trash bin, on company premises
- Conduct a self-audit of your company's waste stream using tools available from the EPA
- Manage electronic waste in a responsible way
- Engage in workplace composting or arrange for a composting service to pick up organic waste



Members of **BLUE EARTH COMPOST** bring their portable (and educational) trash sorting apparatus to a North End community event featuring a mobile food market. A recent recipient of grants to expand composting in Hartford, they have made a business of offering pick-up composting services to both residents and businesses around the city.

ACTION AREA F:

In this action area, our overall vision is more efficient use of potable water, better protection against floods and droughts, and waterways made cleaner through green infrastructure that reduces and cleans stormwater runoff.

Established at the confluence of the Connecticut and Park Rivers, Hartford has faced flood and discharge issues for much of its history. In the 1930s, the rivers were channelized, and a levee system was constructed to protect flood-prone areas.

Around the same time, the Metropolitan District Commission was established to manage the City's sewers and drinking water. It operates a combined stormwater and sewer system. During periods of heavy rain, increased flow strains the system, resulting in untreated wastewater discharging into our waterways, which threatens health and the environment.

Despite the challenges, Hartford has improved water quality. Businesses are using green infrastructure, and residents can participate in a rain barrel program. Access to recreation on the Connecticut River has improved, and the zoning code creates riparian buffers and encourages low-impact development. The City has hired a green infrastructure team to advance these efforts.

Focusing on water quality, access, efficiency, and resiliency, this Plan addresses the future and the potential impacts of climate change.

WATER



- Goal 1: Reduce Discharge into Sewers and Waterways**
- Goal 2: Enhance Waterway Trails**
- Goal 3: Improve Water Efficiency**
- Goal 4: Manage Flood Risks**
- Goal 5: Improve Water Infrastructure Resiliency**

Above: Novice Hartford rowers finish their fall season by competing in their first head race, the Head of the Riverfront Regatta. Riverfront Recapture's Community Rowing Program serves more than 650 annually.

GREEN INFRASTRUCTURE



Developed stormwater projects at several sites and hired a grant-funded GI Team in the Mayor's Office in 2017.

CT RIVER IMPROVEMENTS



Earned designation for the CT River, now swimmable and fishable, as the first National Blueway in 2012.

KENNEY POND FISHING



Restocked Kenney Park Pond with trout, thanks to CT DEEP, and supported "Cops and Bobbers" events with local kids.



WHAT WE'VE DONE, TOGETHER

NPS TECHNICAL ASSISTANCE



THE HARTFORD BLUEWAYS GREENWAY

An Integrated Urban Trail for Active Transportation Connecting Rivers, Parks, & Neighborhoods

Won 3 years of technical assistance from the National Park Service for a "Blueways Greenway," starting in 2017.

ZONING FOR WATER QUALITY



Adopted in 2016 new rules that reduce impervious coverage, incentivize green roofs, and create watershed buffers.

EPA TECHNICAL ASSISTANCE



Awarded a Green & Complete Streets workshop from the Environmental Protection Agency in 2017.

GOAL 1:

Reduce Discharge Into Sewers and Waterways



PUBLIC HEALTH



ECONOMIC DEVELOPMENT



SOCIAL EQUITY

To have a healthy city, we must have clean waterways. Unfortunately, Hartford has a combined sewer system, which collects and conveys sewage, industrial wastewater, and rainwater runoff in one pipe for treatment and discharge into the Connecticut River. During times of heavy rainfall, this system overflows and discharges untreated water into the River. The Park River alone sees 2,000 gallons of raw sewage annually.

To reduce pollution in our waterways, we must divert stormwater, so that we do not have overflow events. One excellent strategy is “green infrastructure,” which is a natural approach to stormwater management that helps to filter and divert runoff before it enters the sewer system. Green infrastructure integrates vegetation and soils in architecture and landscaping. Examples of green infrastructure in the city include the

green roof at the Connecticut Science Center, bioswales along the Connecticut River and North Branch Park River at the UConn Law School campus, as well as permeable asphalt around the State Capitol building.

The City already promotes green infrastructure, through a dedicated team in the Mayor’s office, support from the EPA, and new zoning regulations. But more can be done.



A “Green and Complete Streets” workshop, sponsored by the EPA in 2017, convened stakeholders from local, state, and federal governments, nonprofits, and the MDC.

#	STRATEGY	TYPE	PURPOSE
a	Inventory Potential for Green Infrastructure to Capture Runoff	Inventory/Assess	Assess how much runoff can be captured citywide.
b	Develop Green Infrastructure Specifications	Policy/Code	Create guidelines for public and private parties to use to develop green infrastructure.
c	Evaluate and Pursue Stable, Innovative Funding for Green Infrastructure	Incentive	Promote green infrastructure financing.
d	Support Separation of Combined Sewer System	Partnership/Advocacy	Reduce the frequency of combined sewage overflow events.
e	Advocate for Green Infrastructure to be Incorporated into Long Term Control Plan	Partnership/Advocacy	Ensure green infrastructure is considered as a strategy by State in managing runoff close to source.

GOAL 2:

Enhance Waterway Trails



PUBLIC HEALTH

Hartford is blessed with several waterways, including the magnificent Connecticut River, the North and South branches of the Park River, and intermittent streams such as Gully Brook, which runs through Keney Park. People will be more interested in protecting these waterways if they have some connection to them. So we must aim to expand public access to waterway trails, in ways that are not environmentally harmful.



ECONOMIC DEVELOPMENT

To achieve that goal, Hartford has already benefitted from the work of nonprofit organizations, public agencies, and residents alike. Along the Connecticut River, Riverfront Recapture, in partnership with the Metropolitan District Commission, has overseen the effort to transform the downtown Riverfront and will soon oversee a northward expansion of trails developed there.



SOCIAL EQUITY

Along the North Branch of the Park River, Park Watershed has worked with CT DEEP on management and land use plans. As for Gully Brook, the Keney Park Sustainability Project has deployed hundreds of volunteers to clear brookside trails.

To realize existing and developing plans for expanding waterway access, external assistance is critically important.

#	STRATEGY	TYPE	PURPOSE
a	Extend CT River Trails	Physical Change	Create opportunities for river access by all Hartford residents.
b	Design and Construct Park River Trails	Physical Change	Create opportunities for river access by all Hartford residents.
c	Design and Construct Park Trails Along Gully Brook	Physical Change	Create opportunities for recreation and appreciation of nature along intermittent stream.
d	Incorporate Green Infrastructure into Trail System	Physical Change	Ensure trail rehabilitation or reconstruction has added benefit of reducing and cleaning runoff.



A scene from the North Branch of the Park River, which is a unique urban wildlife habitat accessible by unmarked foot trails.

GOAL 3:

Improve Water Efficiency



PUBLIC HEALTH

We must make more efficient use of our water, so that we can be better prepared as climate change makes the weather go from one extreme to another.

Just as the risk of flooding is becoming higher, its opposite—drought—is also occurring more frequently. Three times in the last 15 years, the State was forced to declare drought advisories, and in Hartford,



ECONOMIC DEVELOPMENT

we have faced lower than average levels of precipitation over the last 3 years. At the same time, our regional water authority, the Metropolitan District Commission, is seeing increased demands for water from towns within its region. If these trends continue, the price of water may rise, and our low-income neighbors may suffer.

Reviewing our facilities and our habits now



SOCIAL EQUITY

can save money on our current bills and safeguard our water supply for the future. To address the threat of drought and water shortages, these recommendations include increased water efficiency in public building, updated building code requirements for water efficiency, and education campaigns to reduce consumption. These reductions will help to make us more resilient when unexpected changes occur.



Devised in 2007 by a group of UTC engineers, the 40-foot long Water Bubbler efficiently refreshes Hartford Marathon finishers—and has saved at least 85,000 plastic bottles along the way.

#	STRATEGY	TYPE	PURPOSE
a	Audit Water Leaks in Public Buildings	Inventory/Assess	Understand water usage in public buildings, so that leaks can be stopped.
b	Stop Water Leaks in Public Buildings	Physical Change	Reduce water consumption by public facilities, saving taxpayer costs.
c	Promote the Use of Greywater and Rain Barrels	Partnership/Advocacy	Reduce systemic pressures during drought and reuse water.

GOAL 4:

Manage Flood Risks



PUBLIC HEALTH

As we noted earlier in this Climate Action Plan, Hartford is at risk of flooding, due to extreme weather caused by climate change. A massive flood could potentially endanger \$1 billion worth of buildings and urban infrastructure, encompassing 25% of Hartford's land area.

Identifying critical infrastructure is an important first step. For example, a wastewater



ECONOMIC DEVELOPMENT

treatment facility, which is the primary processing center for sludge-based waste, sits in a flood-prone area directly adjacent to the Connecticut River. The flooding of this facility would have regional impacts. Any similar facilities must be identified, and risks faced by them assessed.

We must also develop adaptation plans for flooding. In particular, we must focus on



SOCIAL EQUITY

some of Hartford's most impoverished areas, which are vulnerable to the impacts of flooding. A map showing this vulnerability is on page 11.

Improving the resiliency of our aging levee system, discussed in Goal 5, page 70, is another important physical change strategy that must occur if we are to prevent floods from happening in the first place.

#	STRATEGY	TYPE	PURPOSE
a	Identify and Assess Vulnerable Water Infrastructure	Inventory/Assess	Identify facilities that may be vulnerable during emergency events.
b	Develop Adaptation Plans for Flooding	Program/Plan	Plan for future flooding events.
c	Develop Siting Guidelines for Flood-Prone Areas	Policy/Code	Ensure future projects built in flood-prone areas are well-designed to mitigate risk.
d	Support State Water Management Plan to Build Regional Capacity	Partnership/Advocacy	Protect Hartford's real estate, including low-income neighborhoods, through prevention of large-scale flooding.



The Connecticut River regularly floods riverside amenities, such as the walkways, parking lot, and boat launch in Southern Charter Oak Landing, underscoring the need for improvement.

GOAL 5:

Improve Water Infrastructure Resiliency



PUBLIC HEALTH

When it comes to water, a central challenge to Hartford's resiliency—that is, our ability to recover in the face of catastrophic change—is our aging levee system.

Hartford has a 5-mile system of levees, constructed to protect the city's flood prone areas. As the levees continue to age, a lack of maintenance has left the city vulnerable. A massive flood could potentially endanger



ECONOMIC DEVELOPMENT

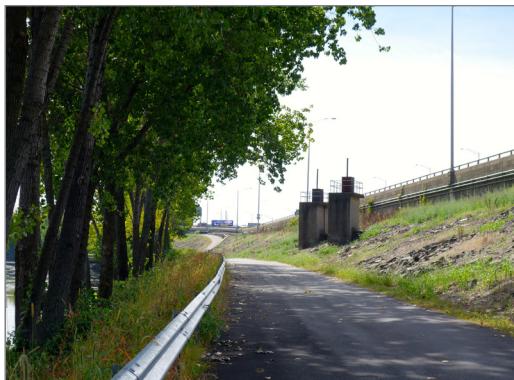
\$1 billion worth of buildings and urban infrastructure, encompassing 25% of Hartford's land area.

Efforts to fortify the levee in partnership with the Army Corps of Engineers are underway. The City is also working to identify facilities that may be vulnerable to flooding during storms. Completion of this assessment is recommended.



SOCIAL EQUITY

Elsewhere (e.g., Goal 1, page 66 and Goal 3, page 68), we discuss another means of achieving resiliency: facilitating or requiring decentralized means of managing stormwater on site through green infrastructure and rain barrel use. Green infrastructure reduces our dependence on grey infrastructure, while rain barrels can provide backup water supplies for residents in the event of drought.



Our levee system along the Connecticut River is aging, and has been targeted for improvement by the Army Corps of Engineers. The levees also impede access to much of the River.

#	STRATEGY	TYPE	PURPOSE
a	Advocate for Funding to Repair and Maintain the Levee System	Partnership/Advocacy	Protect Hartford's real estate, including low-income neighborhoods, through prevention of large-scale flooding.

RESIDENTS CAN:

- Fish, kayak, or walk along our city's riverfront trails
- Install a rain garden to minimize stormwater runoff and set up a rain barrel to collect rainwater
- Organize a clean-up of a local waterway, such as the Connecticut or Park Rivers
- Use guides available at www.hartford.gov/climate to conserve water and save money on your utility bill



A **FISHERMAN** fishes the Connecticut River, just north of Charter Oak Landing. Many Hartford residents take advantage of improved water quality and fish for sustenance or recreation. Programs like an annual "Cops and Bobbers" event with the Hartford Police and Fire Departments, broaden interest in clean waterways.



WHAT CAN YOU DO?

BUSINESS OWNERS CAN:

- Save water and money by installing low-flow water faucets and taking other steps to reduce water usage
- Sponsor free community programs that take place on our waterways
- Install a green roof on a flat roof to reduce cooling costs
- Encourage employees to compete in our annual Dragon Boat Race, to increase appreciation of our waterways



KIMBERLY KELLY, horticulturalist at the Connecticut Science Center, maintains the rooftop garden and green roof. The 154,000 square foot building, which is LEED-certified, is energy efficient, and also limits excess water consumption. The roof, with its native plantings, stays cooler in the summer and requires 50% less water for maintenance.



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THE HARTFORD CLIMATE STEWARDSHIP COUNCIL, a working group of the City of Hartford Planning & Zoning Commission and the lead advisory group on the Climate Action Plan.

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Sara C. Bronin, Chair, City of Hartford Planning & Zoning Commission

REGULAR MEMBERS

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Edith Pestana, Administrator, DEEP Environmental Justice Program

James Sanchez, Hartford City Councilman

At left: The Climate Stewardship Council's conference at UConn Law, which brought together over 200 people to discuss municipal climate action planning and workshop Hartford's plan. We thank them too!

Bernadine Silvers, Co-Chair, Hartford2000
Lynn Stoddard, Director, ECSU Institute of Sustainable Energy
Tom Swarr, Lecturer, Yale School of Forestry
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RESOURCES

WEBSITES & REPORTS

City of Hartford Climate Stewardship Council: www.hartford.gov/climate

City of Hartford Department of Development Services: www.hartford.gov/dds

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At left: Children from Naylor Elementary School in the South End with the tree crew of Knox, who plant shade trees at schools thanks to grants and community partners.

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